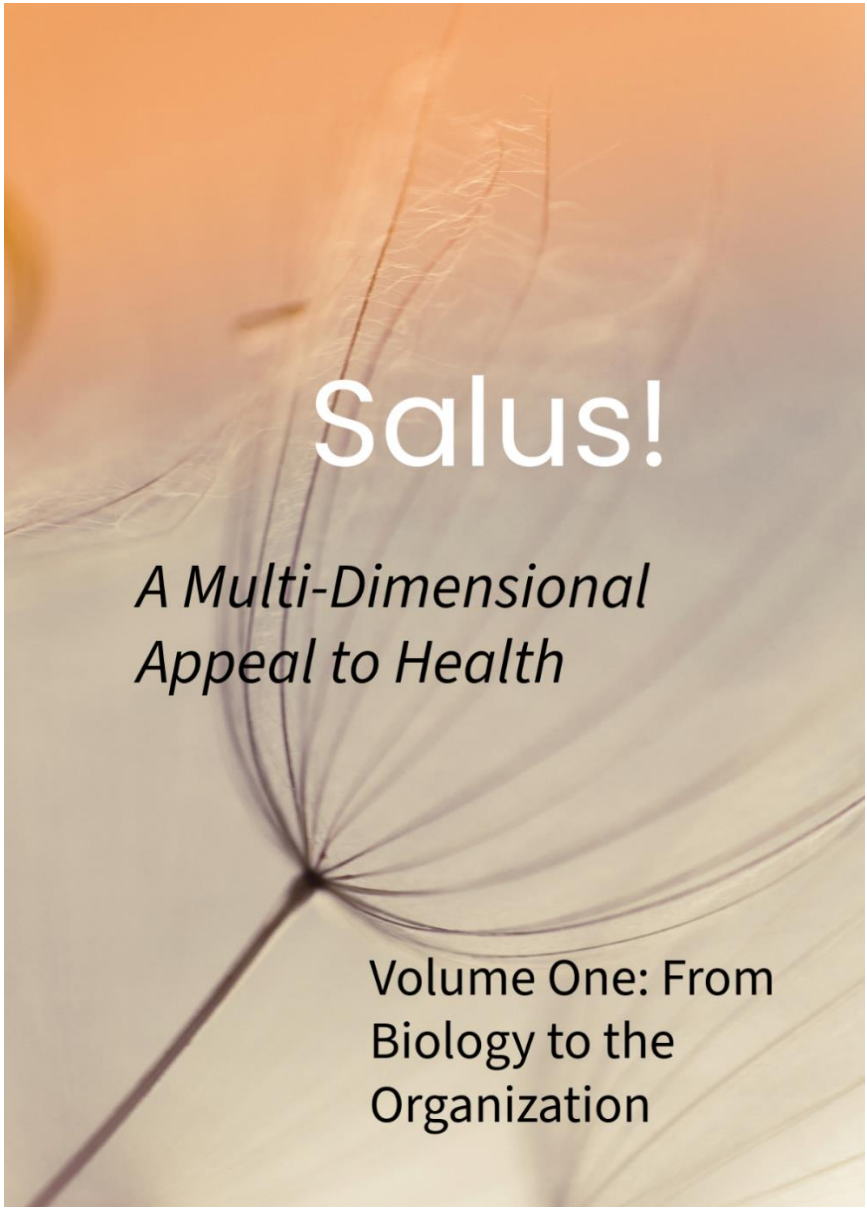
Salus!
A Multi-Dimensional Appeal to Health
Volume One: From Biology to the Organization

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Volume One: From Biology to the Organization

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Salus! A Multi-Dimensional Appeal to Health

Volume One: From Biology to the Organization

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Foreword

If ever there was a book written to guide the forward evolution of health in the United States, this is it.

The fact that you are reading this Foreword says a lot about you… and why this book is indeed what you are seeking. It says you recognize how dysfunctional and unnecessarily expensive the current system of healthcare is in the United States. It also says you are seeking a resource for guidance and direction for "making a difference" in how health is maintained and how healthcare is delivered, shifting the emphasis from curing disease to promoting and sustaining health and wellness for people.

This book was developed and written by a diverse group of senior healthcare professionals from widely based backgrounds, perspectives, and experiences. Drawing from deep knowledge in the basic sciences, clinical medicine, psychology, and sociology, they brought together shared values and a collaborative spirit to craft a comprehensive resource for change.

The Salus Group represents a forum for discussion and exploration based on the "collaborative reflection" by individuals with a broad range of experiences and expertise in multiple health care avenues. Using the well-established "biopsychosocial" model for health care delivery as a foundation, this team built upon the collective experience of many people to bring together this broad-based discussion.

Open-mindedness and mutual respect underpin the robust and wide-ranging viewpoints brought to the forum, seeking common themes and direction for change. History has shown us multiple examples of this sort of forum, from the Parisian Salons to the collectives of mathematicians and physicists in the early 20th century who challenged one another's knowledge and experience to sort out the mysteries of how the universe functions. They reconsidered old knowledge and beliefs. They moved forward into totally new concepts and ideas. The Salus Group has done that in its consideration of wellness, and both the health care

infrastructure and delivery in the U.S. This book represents the essence of those discussions and the central themes that point the way toward functional change.

At the risk of mixing metaphors, this book isn't just a taste of ideas for consideration. It is a supermarket of diverse thinking and perspectives to stimulate reflection, encourage discussion, and hopefully initiate action toward "making a difference… one small step at a time."

Take a moment and leaf through the chapters. You will readily appreciate the broad range of topics, creative processing, and multiple themes running through them. It systematically guides you toward a new understanding of wellness and acts as a stimulus for initiating change. It also provides tools for understanding how to communicate a fresh vision for U.S. health care to diverse communities and audiences. It is not a book for "one-and-done" reading. It is a resource guide to be periodically consulted as your journey through the various concepts evolves and your experience grows.

Will you necessarily agree with everything written in this book? No… and that's a good thing. In fact, it's exactly the purpose of the book: to stimulate thought and new perspectives, to reconsider old concepts of health, to birth new approaches, to form the bases for thoughtful debate and collaboration, and to encourage action with an emphasis on maintaining health and focusing on wellness rather than simply treating *dis-ease*.

May you find this journey of thought (and hopefully action) as rewarding and stimulating as the Salus participants have in creating this resource for you.

Perry A. Pugno, MD, MPH, CPE, FAAFP, FACEP, FAAPL

Emeritus Vice President for Education, American Academy of Family Physicians

Preface

Caroline

I was born an identical twin, sharing a womb that was medicated by Valium, prescribed to my mother during her pregnancy. My life began under a haze of chemistry not my own, a detail I would not understand for decades, but which seemed to foreshadow the fragility of my health and the instability that marked my early years.

In the early years of my life, I was known as the sickly child in my family of origin. Every wandering virus seemed to find me, clinging to my body for days before I could finally shake it free. Illness was a frequent visitor, and by the age of ten, I had already learned, in a way most children never do, the sharp contrast between the heaviness of poor health and the lightness of feeling well. By all accounts, my birth and development were normal, yet I entered the world under a pale-yellow veil of jaundice – a subtle foreshadowing, perhaps, of the delicate balance my body would wrestle with in those formative years. Throughout my grade school years, I routinely participated in medical and dental visits, which felt like a common rite of passage for children growing up. I did not realize it was not so for many of my peers. These regular appointments became familiar fixtures in the rhythm of my childhood, reflecting the attentive care that was not typical for youngsters at that stage of life.

At age ten, I was hospitalized with cat scratch fever. The physical illness was bad enough, but what lingers in memory is the overwhelming emotional regression that came with it. That same year, a lymph node was surgically removed, another scar, another intrusion into my developing body.

By twelve, I nearly died from convulsions. By fourteen, a tick was discovered buried deep in my leg, yet no one tested me for Lyme disease. Each episode carried the same refrain: no answers, no explanations. When I complained of fatigue, pain, or sensitivity, doctors would tilt their heads, scribble notes, and suggest it might be "psychological."

From a young age, I learned what it felt like to have my suffering dismissed, my body's signals labeled as mental instability.

By this tender pre-teen age, I was already well-acquainted with the routines of our medical system and its standard of care: visit the doctor, receive a diagnosis, and take prescribed medicine. It was a cycle I knew by heart, yet one that never seemed to bring lasting relief. I couldn't help but wonder why illness clung to me so persistently, despite doing everything I was told. These questions, though unformed at the time, stirred something within me – a quiet sense that there had to be more to healing than a prescription bottle. What began as frustration with my own frailty slowly became the first flicker of curiosity, one that would eventually lead me to explore paths of health and wholeness far beyond the walls of a doctor's office.

As a teenager, I carried a quiet weight of depression, one I could not yet name or understand. The term happiness was, for me, an unknown commodity. I watched others move through their days with a lightness I could not grasp, while my own inner world felt heavy, shadowed, and uncertain. At the same time, a seed of curiosity about health and wellness began to take root within me. I found myself drawn to the idea that what we eat and how we nourish ourselves might hold answers that medicine alone could not provide. By thirteen, as menstruation began, my moods grew more turbulent, swinging with a rhythm I could neither control nor predict.

These inner storms, though painful, nudged me further toward seeking meaning and solutions beyond the surface of conventional care. My parents would not consider birth control as a means of managing my hormones, yet at the time, it seemed like the only possible solution to the turbulence that defined my daily life. Without that option, I felt caught in a storm with no anchor, searching for stability in a world that offered few answers. In high school, I thrived as a social leader, deeply involved in my community and actively engaged in extracurricular activities, including the drill team and student government. Outwardly, I projected confidence and drive, allowing my intellect and ambition to take the lead. Inwardly, however, I quieted the struggles of my body,

suppressing the biological processes that continually disrupted my sense of balance.

At sixteen, my father blamed me for his divorce from my mother. That year, I was also uprooted from my lifelong friends, social connections, and was cut off from the only sense of belonging I had known. At seventeen, I married my high school sweetheart, driven by a deep longing to create a family of my own. For a short while, his family welcomed me as one of their own – but that acceptance quickly gave way to shame and contempt. Their pre-Vatican II Catholic traditions, rigid and unyielding, demanded that women conform to narrow roles I could not inhabit. In their eyes, my independence and questioning spirit were flaws rather than strengths, a betrayal of how a woman "should" be in the twentieth century.

At nineteen, the birth of my son brought joy but also shocking revelations about my body. Foods I had always tolerated suddenly left me ill, yet doctors ran traditional blood tests only to dismiss my concerns. "Stress," they said. "Anxiety." When I pushed for answers, I was told my body was fine, my mind the culprit. It was here that my holistic health journey began to unfold. My curiosity about biological processes evolved into a passion to understand, because if no one else believed me, I had to learn to believe in myself.

The cycle of betrayal followed me into adulthood. At twenty, I uncovered the painful truth that my husband had been lying and cheating, shattering the fragile foundation of trust I had built my young marriage upon. The emotional upheaval consumed me, drawing my attention inward and leaving little space for anything else. Yet as I wrestled with the heartbreak, my body began to falter as well, its challenges growing louder, as though mirroring the turmoil of my inner life.

By the time I was twenty-one, I was divorced and raising my son alone. My twenties were marked by turbulence: constant custody battles, endless fatigue, and the sting of being misunderstood not only by my family but by the medical community itself. Doctors wrote prescriptions for antidepressants instead of investigating the deeper causes of my pain. The message was always the same: It's in your head. I fought back with

holistic measures, hair analysis, chiropractic care, food sensitivity testing, and heavy metal testing, to name a few.

Therapy, however, opened a different door. I began to see the patterns of being a child of an alcoholic – the silence, the guilt, the survival mechanisms that had shaped me. Al-Anon and CODA meetings became my refuge. For the first time, I found people who didn't dismiss my experience but instead reflected on it with compassion.

At twenty-four, I fell in love and became pregnant again. But when my partner refused marriage, I chose to end the pregnancy, carrying grief into yet another season of life. That same year, I joined the military for stability, medical coverage, and education, resources I could not have otherwise accessed.

By twenty-six, I moved to Texas to be with a new partner. At twenty-eight, I lived with a man I had met in the military, and together we bought a flower shop. For a while, it seemed as if I had carved out stability. At thirty, I completed my bachelor's degree through independent study, proof to myself that I was capable of building something enduring.

But at thirty-one, the cycle of betrayal returned. Our house was robbed, and soon after, I learned my partner had been lying all along, fabricating employment, cashing in our assets, leaving me deceived and destabilized again. And when I sought medical help for the toll this took on my body, I was once again told my symptoms were psychiatric. Each dismissal deepened my distrust in a system that should have cared for me but instead left me questioning my own reality.

Caroline is a real person, and this is a real story (though we have changed her name and several details about her life to ensure confidentiality). We read Caroline's story and grieve for her. We wince when reading of her many vicissitudes. As providers of healthcare, we sort through our own file of diagnoses and treatment plans, so that we might assist her at this point in her life. Most of all, we wish her good health. In the midst of all her

physical and psychological injury, we wish Caroline health. With a body that holds a long history of illness, we wish her a set of services both within and outside the formal healthcare institutions that improve her health.

SALUS! This is the Latin term for wishing someone good health. The English term "salutations" derives from this ancient word. We turn to Caroline and declare: SALUS! Our book concerns these good wishes not just for individual health but for health as achieved in healthcare institutions and contemporary societies. The two volumes of this book are dedicated to Caroline. We wish her health by exploring at many levels the meaning of health and the means for bringing about health for Caroline, and, ultimately, health for all of us.

This Book

You will find in this book a somewhat distinctive presentation. We, who have authored this book, come from multiple fields related to health services and bring to the book many years of experience in the field of medicine. Yet, in coming together in preparing this book, we have treated it as a forum rather than a laboratory. Our presentation is experience-based rather than experimentally based. This book more closely resembles what you are likely to hear at the cocktail party or dinner at a health care conference, rather than what is being reported during the conference session. We might even imagine that the conversation centers at times on a case presentation made at the conference regarding Caroline.

You will find roughhewed narratives rather than polished presentations. We offer direct text rather than just polished prose written for consumption by a reader rather than fellow conference attendees. As authors, we are candid and authentic, rather than appearing cautious and circumspect. We do not always agree with each other. Hopefully, this means that the ideas we offer are generative. They should provoke

controversy and solicitation of differing views. We don't declare that we are "right" but do aspire to be interesting and forthright regarding health care issues about which we care passionately.

Most importantly, we have provided a robust example of how conversations on important topics can drive thought and creativity. Innovative and the first steps toward reform of a system such as healthcare can emerge from the open, uncensored expression of diverse perspectives, opinions about critical public policies, and shared narratives regarding wide-ranging practices.

You will also find extended vignettes that spin off from the narrative offered by Caroline. While these vignettes are "made up," they are based in the real-life experiences of multiple primary care physicians, healthcare administrators and reformers, and folks who play an important role at the "fringe" of the formal healthcare professions.

Given this opening expression of our viewpoint, it might be clarifying to provide a brief background regarding the setting in which this book was born, and the primary nature of this viewpoint.

The Salus Project

As professionals who come to the field of healthcare from many different perspectives and from a history of advocating specific policies and providing many different kinds of health-related practices, we have established a set of activities that are all directed toward SALUS.

Salus Forum

There is first a convening of monthly forums that commenced in April of 2024. These Salus Forums were held on Zoom and lasted for two hours. A prompting or catalyzing topic was introduced at the start of each Forum by one of the Salus Forum members or by an invited guest. The dialogue took off from this point, often

focusing directly on the topic that provided the catalysis. At other times, the topic veered off to related Salus-related topics, such as what occurs during an informal conversation among conference attendees between formal sessions.

Jack Westfall, one of the Salus Forum members, offers the following reflections on these monthly meetings:

> I have been thinking a lot about the group and the topics. Several things come to mind
>
> First is the process of the Salas group. A group of oldish medical professionals. Meeting to hear, discuss, imagine, and reflect.
>
> It is an amazing concept if you think about it. Who does that? Well, I think we are in great company historically. I don't pretend to put the Salus group in the stratosphere of the world's great thinkers, but, on the other hand, why not.
>
> This process has its roots in the Parisian Salons, the Cambridge Apostles, the Bloomsburg group. From Frankfurt to Vienna, there have been groups that met outside the mainstream science/arts/literary culture to explore. Salus seems to take its process from that historical crowd of the curious. Some features of the folks gathered. Curious, non-judgmental, learned, well read, and continue to read, integrated (that is, they seem to integrate new knowledge with old).
>
> We know about these old groups, not because they started out as a way to change the world, but because, through their discourse, they moved the culture of the day (science, literature, arts, religion, etc). Change was not why they met. They met because they had to have a venue for expressing their questions and epiphanies. I believe Salus is like that. At least from what I have seen.

Salus members meet because they need a place to have these conversations. And venues like this just aren't that common.

Second, the world needs more Salus. While the Parisian Salons and the Frankfurt school were influential, they were too few and too far between. I am sure you know of Balint. And Balint was/is a good idea. But Balint groups in one place, one practice, one residency, are not enough. So Balint spread the word.

I am not saying we need to franchise Salus. (perhaps we do, but that's another matter for another day). But the concept of Salus. The getting together, the reading, reflecting, discussion. No solutions, but active mulling over the science and thinking of the day will move the world. We need more of that. (perhaps Salus could be presented at NAPCRG, or STFM, or some such venue).

The topics have been all over the place. From pain to poop to farming. And the readings and conversations have included multiple ways of knowing. 1) scientific exploration, the scientific method, hypothesis testing, and 2) experience, observation, what have I seen/heard/felt. The group has explored the balance between deductive and inductive reasoning. This wide variety of ways of knowing is an important feature of the group. There is not one right way to know. That idea is not trivial.

Finally, I think the group has a historical grounding. And it has been enjoyable to experience the specific modern topics in relation to historical perspectives. There is a thread of history that infuses the conversations, either intentionally or by accident; there is a thread that pulls from history into the present, and out into the future. From Galen and Hippocrates to McEwen and Rodgers, to what comes next.

> There is a saying that "what's old is new again." Yes, but Salus also provides for the corollary, "sometimes new is new" and that is a unique approach. This weaving of the historical thread into the fabric of our conversations is a strength of the group and our meanderings. And while mostly grounded in Western thought, it at least gives voice to a broader notion of how we might best think and live. Today, yes, but always with an ear to the past, and an eye to the future.
>
> When I was in college, I was in a small book club with 3-4 students, 1-2 faculty, and several folks from outside the college. We met, much like Salus, read a book, and discussed it. No judgment, no required values or beliefs, just reflecting, trying on new ideas, old ideas. Galileo, James, Dodson. And I have been planning to host a series of small living room Salons for the past decade. Scruffy Salons I called it. On Water in the west, microbiome, music, etc. Have not gotten it together, so the Salus group has been a wonderful outlet for my brain and soul. Thank you.

Jack, you are certainly welcome. We hope the Salus Forum has been just as gratifying for the others who have participated.

The Salus Website

Each of the forums was recorded. The video recordings were later transcribed and converted to Vimeo for permanent archiving. But where to put the recording and transcript? Fortunately, a website was available that had previously been devoted to documents related to a variety of matters, ranging from COVID to the human embedding of technologies. Called *Communities Collaborating*, this website seemed fully aligned with the mission and vision of Salus. We were members of different communities (including different disciplinary communities and professional fields) who came

together to collaborate on behalf of Salus. Following is a link to this website: https://communitiescollaborating.com/

Written Documents

Participants in the Salus Forum found that they were motivated by the free-floating dialogue of the forum to prepare essays related to Salus matters. In several instances, these essays were related to a Forum trigger topic related to an upcoming Forum meeting and were prepared for review by Forum participants prior to this meeting.

In many instances, these essays were published in one of three digital libraries owned and/or curated by one of us [WB]: the Library of Professional Psychology. Library of Professional Coaching and Coaching Quad. Links to these essays were placed on the Communities Collaborating website.

Salus Books

Members of the Salus group are motivated to prepare books regarding the perspectives, policies and practices generated and considered during the Salus forums and in the essays published subsequent to or in conjunction with these forums. A series of books was planned, these two volumes being the first of them.

Given these ambitious goals and the products already originating from the Salus Project, it is appropriate to ask about the distinctive perspectives, policies and practices that are being offered by those involved with this project and about the mission and values that provide a foundation for this project. Put simply, what do participants in the Salus Project have to say to Caroline?

We offer a brief examination of currently dominant healthcare perspectives, policies and practices in the United States. We then turn to the ways in which we see healthcare in a different, Salus-based manner.

Biomedical vs. Comprehensive Biopsychosocial Perspectives, Policies and Practices

Current American Healthcare is rooted in the mind-set of short-term, single-cause, single-cure explanations for the vast majority of health conditions. Those operating in this environment would find it very difficult to work with Caroline. The single-cause, single-treatment dominant model in healthcare is the *Biomedical Model*. This framework views illness as a deviation from biological norms caused by a specific pathogen or physical malfunction. Its core assumption is that identifying and treating the single biological cause will restore a person to health.

Key assumptions and features of the biomedical model are:

- **Doctrine of specific etiology:** The belief that every disease can be traced back to one specific, underlying biological cause, such as a germ, virus, or genetic mutation.
- **Mind-body dualism:** The model views the mind and body as separate entities that do not interrelate. Psychological and social factors are often excluded from consideration unless they have a detectable biological basis.
- **Body as a machine:** It conceptualizes the body as a machine made of parts that can be repaired. Doctors act as mechanics who fix the "broken" parts to restore normal function.
- **Focus on treatment, not prevention:** The primary focus is on diagnosing an illness and administering medical interventions to cure it, rather than on preventative care.
- **Reductionism:** It is reductionist in its approach, explaining complex phenomena by analyzing their

smallest biological parts, such as cells and biochemical processes.

Strengths of the biomedical model

The biomedical model has been remarkably successful and remains the dominant framework for many conditions.

- **Effective for acute conditions:** It excels in treating acute illnesses, infectious diseases, and traumatic injuries where there is a clear, identifiable biological cause.
- **Empirical and objective:** Its focus on objective, biological findings—like blood tests, X-rays, and imaging—allows for precise diagnosis and treatment, particularly in emergency medicine and surgery.
- **Revolutionized medicine:** This model led to historic breakthroughs like Louis Pasteur's germ theory and the development of antibiotics and vaccines.

Limitations and modern challenges

The biomedical model's effectiveness is limited when addressing complex, chronic, and multifactorial illnesses—such as those afflicting Caroline:

- **Inadequate for chronic illness:** It often fails to address chronic conditions like diabetes, obesity, and cardiovascular disease, where lifestyle, social, and psychological factors play a significant role.
- **Ignores psychosocial factors:** Its dualistic view disregards the crucial influence of psychological and social factors on a person's health. For example, the model would treat liver cirrhosis with medication but may ignore the social and psychological reasons behind alcohol addiction.

- **Limited view of health:** The definition of health as simply the "absence of disease" is too narrow. A person can be "healthy" by this definition but still have a low quality of life due to social or psychological issues.
- **Doesn't empower patients:** The model positions the patient as a passive recipient of treatment, rather than an active participant in their own healing.

Due to the limitations of the biomedical model, alternative frameworks have emerged to provide a more comprehensive view of health that incorporates multi-causality, multi-perspective, multi-factorial, with multi-modality treatments carried out often by teams of health professionals working collaboratively.

Alternative and expanded models

This is where someone like Caroline may find help. Several popular perspectives, policies, and practices are currently available that would benefit Caroline:

- **Biopsychosocial model:** Pioneered by George Engel, this model is a direct response to the shortcomings of the biomedical approach. It argues that biological, psychological, and social factors are all important determinants of health and illness.
- **Complementary and alternative medicine (CAM):** While complementary procedures (such as physical therapy, massage, and dietary consultation) are perceived as a helpful addition to those offered by traditional medical institutions, alternative procedures are perceived as standing alone from traditional (allopathic) medicine and often competing with the traditional approaches. Alternative procedures are wide-ranging, from acupuncture to yoga and herbal medicine.

- **Integrative health:** This approach combines conventional medical treatments with complementary and alternative therapies in a coordinated way.

Together with CAM, "integrative" perspectives often encourage a holistic view of the patient.

Multi-Tiered Salus Perspectives, Policies, and Practices

Salus provides a wide variety of viewpoints and practical suggestions. The perspectives offered by Salus range from a view of the body as it operates in an allostatic manner, to the complex and adaptive functioning of healthcare organizations, to the challenging conditions in which healthcare policies are formulated and enacted. As Craig McEwen, one of our Salus Forum invited guests, has noted, virtually all policies ultimately end up being health policies – housing policy, agricultural and food policies, social welfare policies, and crime control. It is not just or evenly mainly the healthcare policy of which we are ultimately concerned. The two volumes in this series on Salus exemplified this much broader perspective on healthcare.

As we shall note at several points in this volume and Volume Two, healthcare is now being delivered under fundamental societal conditions involving volatility (V), uncertainty (U), complexity (C), and ambiguity (A), as well as closely related conditions of turbulence (+) and abundant contradiction (+) (VUCA-Plus). We believe that no serious wish for improved health (Salus) can be formulated without consideration of these much more expansive VUCA-Plus conditions. We furthermore note that there is a strong pull away from the many challenges of VUCA-Plus. In place of volatility, we seek out stability (S), while in place of uncertainty, we search for certainty (C). Similarly, we wish to replace complexity with simplicity (S), and ambiguity with clarity (C).

The combination of these seductive attractions (SC^2), along with the pull to calm in place of turbulence and consistency in the place of contradiction, leads to a state of Serenity. It is in this state that our world becomes bent into a new reality, and we are left with reliance on false authority that reassures us that we can remain secure in our newfound Serenity. In this volume and in Volume Two, we challenge the assumptions underlying the six alternatives to VUA-Plus. We offer not just a valid portrait of our healthcare reality but also Salus-based perspectives, policies, and practices that enable us to address the challenges of contemporary healthcare in a VUCA-Plus saturated environment.

In our engagement with an ever-changing environment, we also journey in this book about Salus from a physiological perspective regarding the operation of dynamic, internally oriented allostatic processes in our body to the equally dynamic operation of an externally oriented process, which has recently been labeled *Polystasis*. Accompanying these processes are somatic templates and psychosocial templates. Individually generated personality styles and firmly established frames of mind (personal paradigms) reside alongside collective organizational cultures and widely established bubbles of belief (societal paradigms).

At the level of practice, Salus focuses on not only medical practices that are meant to cure or mend, but also those that ameliorate (reduce symptoms), prevent, and enlighten. At each level of this multi-tiered approach to healthcare, there is a diverse set of practitioners (ranging from nurses and doctors to hospital administrators and legislators). These practitioners embrace a diverse set of styles and change strategies to accompany the initiation of specific practices. These styles range from assertiveness to thoughtfulness and from an emphasis on vision to one of tactics and strategies. There is a focus on the individual healthcare clinician as a leader, as well as a focus on teamwork and collaborative leadership.

There is also the matter of policies. As we will see through this volume and Volume Two, the multi-tiered approach to policies that impact health should be found at all levels and in all corners of the healthcare world. We will be considering the four-tiered perspective offered by a healthcare planner in Washington, D.C. We will also be exploring such health-related matters as food processing, obesity, and adverse childhood experiences (ACE). They all require multi-tiered perspectives and resulting multi-tiered policies. Unfortunately, this multi-tiered perspective is not often taken, and appropriate multi-tiered policies are not forthcoming.

For instance, food preparation is considered only a matter of business and finances. How should "manufacturers" of highly processed food best do the processing so that it will cost less to produce and maximally appeal to the contemporary consumer? Similarly, obesity is considered only a food consumption problem that can be solved with medications. What new medication will enable us to remain slim while not impacting our lifestyle? The healthcare concerns related to highly processed foods are given very little consideration, while the economics of obesity remain in the background. Social policy in both instances is being ignored.

The matter of social policy is also set aside in the consideration of adverse childhood experiences. We find that the State of California takes the study of ACE seriously and requires or encourages healthcare practitioners to use ACE screening. Once again, social policies are given little attention, even though changes in many existing policies can reduce ACEs (either narrowly or broadly defined), just as they could improve the quality of food being produced and reduce levels of obesity.

Producers of food consider food processing only as an economic issue, while those addressing obesity consider only food consumption habits and pharmaceutical interventions. Healthcare professionals have captured ACEs only as a healing intervention. Broader perspectives are required. The perspectives,

policies, and practices of Salus are directed toward this requirement. We make food healthier, do a better job of reducing the negative impacts of obesity, and reduce adverse experiences for children only by considering a diverse set of policies and practices--including treatment, amelioration, prevention, education, empowerment, economic incentivization, and re-prioritization.

Throughout this book, we will be referencing the broad-based viewpoint of Salus as related to perspectives, policies, and practices using an abbreviation: Salus-P3.

An "Appeal" for Health

This book is meant to influence. We are offering distinctive perspectives, targeted policies, and diverse medical and non-medical practices that we hope will nudge the world of healthcare forward a little bit. SALUS is intended as not just a passive wish for health, but as an active appeal for thoughtful engagement in conversations and dialogue about healthcare reform and improved health for all members of mid-21st-century societies.

We make use of a unique word, "appeal," that represents the multiple ways in which we hope to influence you as the reader. This word refers to the active state of attraction, as well as to the more passive state of requesting attention and action. It also refers to a more combative state of addressing a perceived injustice or dysfunction.

One of these meanings of the word "appeal" refers to *attractiveness*. We hope (and believe) that you will find our Salus perspectives, policies, and practices to be appealing. Second, we wish this book to be *persuasive*. We appeal to your thoughtfulness and desire to assist other people with their health. We assume that you also embrace "Salus." Third, we acknowledge that we are a bit *defensive* when facing the powerful forces of contemporary healthcare. We issue an appeal against current healthcare

perspectives, policies and practices that we often find to be harmful rather than healing.

Perspectives, Policies, and Practices

The Salus appeal and this book concern not just ideas but also actions. Salus is about understanding a system that is derived in part from giving this system a "push" to see what happens. This involves not just new practices (both inside and outside medical institutions) but also shifting public policies (ranging from funding priorities to regulations), along with reformed perspectives (initiated through education and advocacy). Often identified as "action research," "action science," or "reflective practice," the coupling of thought and action resides at the heart (and head) of Salus.

We pay attention to "mind-sets" that are operating in current healthcare systems. The question is posed: how do we slowly and reflectively view the current healthcare situation? How do we use the past and historical trends to better understand our current healthcare crises. Most importantly, how do we take what we know about our current healthcare systems into the future. How do we take action, learn from this action, and plan for the next step. In essence, as Salus thinkers and actors, how do we "lean into the future," "learn into the future," and "lead into the future."

As already noted, Salus is about appeals. One of the most important appeals concerns what we call *Self-Agency*. Over what do we have control. Over what don't we have control as individuals and as collectives? To what do we direct our attention when seeking change? Do we look inside ourselves, or do we look to change in our organization or even society? In this book, we consider change at each of these levels. How do we bring about the change? What might a Salus-based improvement look like? Once again, how do we "lean into the future"? How do we "learn into the future"? And how do we "lead into the future"?

Sources of this Book's Content

This volume and Volume Two are dependent on three sources: (1) the three major authors, (2) participants in the Salus Forums, and (3) contributions made by healthcare leaders invited to join us during one or more forums.

Three Major Authors

William Bergquist, Ph.D. comes to this project from his extensive work with health care systems, including a multi-year role as lecturer in a program conducted at the Medical School of the University of California, San Francisco (UCSF), where he first met Jeremy Fish. Dr. Bergquist also has had a long-term interest in the culture of health care organizations (Bergquist, Guest and Rooney, 2002) and recently has identified and written about a process called Polystasis, this process being sparked by conversations at a Salus Forum. As the president of a graduate school of psychology for many years (where he met Gay Terman), Bill Bergquist has often focused in his teaching and writing on the nature of effective leadership in various sectors of society, especially the role to be played by leaders in confronting the challenges of a world filled with volatility, uncertainty, complexity, ambiguity, turbulence and contradiction.

Jeremy Fish, MD comes to this project from his extensive work and leadership in Family Medicine & Primary Care Graduate Medical Education at a local level in the East SF Bay Area where he founded the John Muir Health Family Medicine Residency Program—an innovative UCSF-Affiliated, team-based, Advanced Family Medicine Residency program with nationally recognized Primary Care Behavioral Health Integration, including a co-residency training of PsyD graduate and post-graduate students side-by-side with Family Medicine Residents. Dr. Fish was the founding director of the California Academy of Family Physicians Statewide Residency Network, now including nearly 80 Family Medicine Residency Programs, the largest Primary Care GME

network in the country. He has deep faith in the value of family medicine and primary care to meet the healthcare needs of all communities in CA and beyond. Jeremy Fish and Bill Bergquist founded the Salus Group to develop a growing online, inter-professional community to explore better ways for healthcare to meet our rising population-health care needs in a time of overly fragmented, sub-specialized, costly and siloed healthcare systems.

Gay Teurman, Psy.D. comes to this project from a background and expertise in applied neuroscience and clinical neurotherapy. She also brings to the Salus group her holistic clinical experience and her work in the development of professional training programs, international academic collaborations, and graduate-level instruction in psychological assessment and clinical practice. Dr. Teurman holds a Doctorate in Clinical Psychology and is a Licensed Marriage and Family Therapist, and Board-Certified Neurofeedback practitioner. She has been awarded a certification from the Biofeedback Certification International Alliance (BCIA) with advanced certification in QEEG-DL brain mapping and neurophysiological assessment. Gay Teurman has been the Clinical Director of the Brain Health Clinic in Sacramento, California, a specialized health psychology practice dedicated to the assessment and treatment of complex neurological and psychological conditions including traumatic brain injury, post-concussive syndrome, PTSD, cognitive decline, chronic depression, and anxiety. Her work integrates quantitative EEG brain mapping, neurofeedback, neuromodulation, and evidence-informed integrative health psychology interventions to optimize brain function and improve clinical outcomes.

Salus Forum Participants

Following are brief descriptions of those senior health care professionals who regularly attended the monthly Salus Forums. Their contributions to this first volume of Salus! are substantial:

Mitchell Applegate is a long-standing Hospitalist Physician Faculty member serving the John Muir Health Family Medicine Residency Program. He is board-certified in four areas: Family Medicine, Critical Care, Geriatrics, and Lifestyle Medicine.

William Gillanders is a former Family Medicine Residency Director, where his dedication to education earned him the prestigious Zervanos Outstanding Program Director Award. Throughout his career, Dr. Gillanders has been a prolific researcher and author.

Walt Mills was the founding Program Director at the Morehouse School of Medicine Dominican Hospital Family Medicine Residency Program in Santa Cruz, California, and has served as President of the California Academy of Family Physicians.

Perry Pugno was founding chair of the National Institute for Program Director Development, has served as Vice President for Education for the American Academy of Family Physicians, and authored more than 100 publications in clinical medicine, education, and medical ethics.

Mark Vukalcic has served as a Family Practice doctor, as well as in the fields of Anesthesiology and Oncology. Dr. Vukalcic is noted for teaching residents on their anesthesia rotation how to optimize their patients preoperatively. He offered simple predictors of who could successfully tolerate procedures.

Jack Westfall started the practice-based High Plains Research Network, focusing on communities in rural and frontier Colorado, in conjunction with the University of Colorado, and has served as the Director of the Robert Graham Center for policy research in primary care and family medicine in Washington D.C.

A fuller biographical statement regarding each of these Salus Forum participants is to be found at the end of this book.

Salus Forum Guests

Contributions were made by the following Salus Forum guests to this first volume of Salus:

Craig McEwen is the Daniel B. Fayerweather Professor of Political Economy and Sociology Emeritus at Bowdoin College.

Scott Sandland is co-founder and CEO of Cyrano.ai, a natural language understanding system empowering AI with soft-skills related to active listening techniques.

Jeffrey Smith has the unique distinction of having served as a doctor, lawyer, an elected official, and an executive manager in Contra Costa County and Santa Clara County, California.

Peter Sterling is a widely published anatomist, physiologist, neuroscientist, and Professor of Neuroscience at the University of Pennsylvania School of Medicine.

A fuller biographical statement regarding each of these Salus guests is to be found at the end of this book.

Salus Forum Origin and Participation

Over the past 18 months, the Salus Forum has been held for an extended hour once a month via Zoom. One might justifiably ask why busy and/or retired health care professionals would set aside time each month for conversations with colleagues. One of the founders of the Forum, Dr. Jeremy Fish, offers his own response to this inquiry by reflecting on the origins of this extended dialogue:

> Why Salus, Why Now? Well, like many great things, Salus started very quietly, with a very simple idea that crossed my mind on April 7th, 2022. I was harkening back on my career and realized I had learned some very valuable and lasting lessons from a stout, bearded, wise psychologist in 1999 while completing a 1-year UCSF Northern California Fellowship program. But, like so

many fond memories, I could not remember his name. I could see him in my mind's eye, pointing out how we tend to see reality in different ways depending on our perspective and whether we are looking at the world from a team of people vs a single mind.

He drew an iceberg and explained how we tend to focus on the surface of things as puzzles and problems, then we try to solve or fix them. As long as we stay at that level and don't address the rest of the iceberg—the underlying dilemmas, paradoxes, and mysteries—well, we find ourselves with a limited ability to accomplish our goals. We keep fixing the surface puzzles, while the underlying challenges fester and grow. He helped us understand that as we go deeper into nearly any challenge, we find dilemmas, paradoxes, and even mysteries. As we go deeper, our single mind starts to struggle to understand, we need to broaden our perspective, bring in other people and minds, share our differing views in order to more fully understand what we are dealing with. Thus, a high-performance team becomes more vital to assessing reality once we plumb the depths of the challenges we find within a person's healthcare or a healthcare system and beyond.

I saw immediate value in his teachings for patient care—finding most of my patients struggled with healthcare dilemmas more than simple puzzles or problems. We try to make their challenges into problems, list their problems and try to address them one-by-one. Yet we often bump into dilemmas. If I treat her Heart Failure as aggressively as possible, I find her kidneys start to deteriorate. Treating one problem makes another problem worse. Yikes. That's a dilemma. I give my patient a urine-inducing medicine to reduce his leg swelling and his kidneys start to act-up again. Addressing dilemmas seems to be an everyday occurrence, why wasn't I trained to learn to navigate dilemmas rather than trying to make everything a

problem I can fix? As I moved into more and more leadership roles I found the same thing. Reduce Length of Stay and our Re-admission rates get worse.

Hmmm. Seems like that Psychologist knew what he was talking about. So, as I began to reflect back on my career after COVID in 2022, I realized I wanted to talk to him, so I contacted folks at UCSF and after a few weeks, Bill Bergquist, PhD, was on the other end of my grateful email, letting him know how much I appreciated his training decades ago and how vital it has been throughout the course of my career.

Well, we struck up some conversations via Zoom and soon Bill had me co-authoring a series of expansive articles on VUCA-PLUS (Volatility, Uncertainty, Complexity, Ambiguity, Turbulence, Contradiction), mainly focused on one element of VUCA-PLUS—that of complex adaptive systems in healthcare. Turned out he had retired in Harpswell, Maine, and continued to write many books. Our conversations and essays were so fun and meaningful for us both, that we soon began to wonder, wouldn't it be great to invite some more friends into these discussions, expand our perspective across several professions involved in healthcare and see what happens?

Bill, as usual, took the lead, created a website, and came up with our name, Salus, Latin for Health & Well-Being. We sent out invites and a link to our emerging website: https://communitiescollaborating.com/ I'm sure it was Bill's idea, but we quickly decided that we would format the sessions as a very brief (5-10 minute) topic, followed by an inclusive discussion of all who sign in. These Salus sessions began in Spring of 2024, and we continued to invite a broader group of people across professions we felt had unique perspectives and breakthrough areas in healthcare, particularly around Primary Healthcare and Population Health.

Sometimes an expert would come present for one session and then bow out, other times they would join regular sessions. Other than the format and choosing the same first Wednesday at 1 pm PST for our Zoom sessions, we kept it open for more to be invited and for topics to be selected by the participants. The goal was exploratory in nature---inviting inter-professional perspectives and free-sharing to expand understanding and wisdom within the growing community, rather than finding the "right answer." Over the course of 18 months, we all felt we had enough material to warrant attempting a collaborative publication of a compilation of our sessions into a book, which you are now holding in your hands or viewing digitally.

We have done our best to be true to the nature of Salus, a free-flowing, exploratory inter-professional community trying to re-imagine healthcare, particularly population health within a nation often more focused on individuals through powerful institutions. It has been a remarkable journey. And we hope you enjoy reading through one product of our efforts, Volume #1 Salus. We humbly suggest you allow yourself to meander through our chapters, focusing on topics and realms of healthcare you are most curious and interested in. We are already working on Volume #2. And all of our Salus Forum sessions can be found on our website if you prefer to learn through listening and watching more than reading.

This first volume focuses on health-related topics ranging from the biological to the organizational, while the second volume focuses on healthcare issues related to institutional and societal matters, as well as leadership in healthcare organizations. Volume One is divided into three sections: (1) a biological appeal to health, (2) a psychological appeal to health, and (3) an organizational appeal to health.

Our Appreciation

Bill wishes to extend his appreciation to several of his colleagues from the years when I was serving as president of a psychology graduate school. These colleagues include those who offered a helping hand when the school was fully situated in the United States. These colleagues include John Preston, Robin Drotleff, and John Bush. When my own consulting and the programs of my school expanded to serve leaders and mature learners from throughout the world, I found guidance, support, and rich learning in many of my associations, particularly with Dr. Mao, April Chi, Haim Weinberg, and Mirasol Delmar. On the home front, the caring and loving support I have received from Kathleen O'Donnell has been life-affirming, especially as I began my journey around the world. And then there is the matter of legacy. There is nothing more precious than my enduring relationships with my son (Jason), daughter (Kate), and five exceptional grandchildren.

Jeremy would like to acknowledge his many mentors along the way, starting with his third-grade teacher, Mrs Love. "She taught me I could become a joyful lifelong learner at a time when I felt overwhelmed in a small Catholic School on St. Thomas, Virgin Islands, catching me up after three years of learning very little at Hippie schools in Berkeley, CA." Jeremy would also like to express his appreciation to his wife, Susan, for her perseverant soul, her unfiltered honesty, and her dedication to our marriage and life together for nearly 30 years now. And appreciating his son, Ben, "for teaching me to relax and enjoy life while recognizing that Gen Z is facing daunting intrusions from addictive devices and media, expensive educational challenges, yet seeing him maintain his optimistic nihilism that we make our own meaning in life and things will work out well in the end."

Gay is deeply grateful for the many mentors who shaped her throughout her career, including her time in private practice,

government service, academic leadership, and the neurofeedback community. Influential figures like Ann Edwards, Dr. Richard Belli, Dr. Ken Philipp, Dr. Christy Lewis, and Jay Gunkleman have enriched her life with their wisdom and support. She also appreciates the inspiration she's received from students and faculty worldwide. Each of these colleagues has left an indelible mark, offering both friendship and professional guidance that has shaped her and will always be cherished. Gay offers the following note of appreciation: "Above all, I am blessed by the unwavering encouragement and support of my son, Brandon DeLallo, whose belief in me has been the driving force behind my personal growth and resilience. And my lifelong friend, Cynthia Doeve, has also provided unwavering encouragement and support. Their presence, along with my mentors and colleagues, has made my journey both possible and profoundly meaningful."

So here we are, offering a Salus-based conversation in this book. Who knows where it will go in the ether. But we can appreciate the insights offered from multiple disciplines inside and outside the domain of healthcare. Furthermore, we appreciate the reflections offered by participants in the Salus Health Care forums. These practitioners come with many years of experience in addressing the challenge inherent in the physical and mental health of many 21st Century patients. A listing of these participants appears at the conclusion of this book, along with brief descriptions of their remarkable and diverse life achievements. We particularly appreciate the editorial assistance provided by Bill Gillanders, one of the Forum participants, and Craig McEwen, one of the guests invited to the Salus Forum.

Chapter One
Multi-Faceted Health Care

Caroline

Looking back, I see my life as a tapestry woven with illness, betrayal, and dismissal, but also with resilience, truth-seeking, and an unrelenting hunger for healing. Each fracture pressed me toward self-discovery. Each betrayal forced me to rise. And each time a doctor dismissed me, I became more determined to honor the truth of my body.

I left my partner and was once again on my own with my son. I moved from Rockford, Illinois to Springville, Illinois to be closer to my mother and support and the opportunity to start anew. I lived right on Lake Springfield (I love living by the water) and enjoyed the life of this capital city. I began working in the diet and weight-loss industry, a path that seemed aligned with my growing curiosity about health, although I was still struggling deeply with my own body image, around that time. Shortly after my move, my wisdom teeth (all four at once) were removed, and I had complications and an arduous recovery. Once again, I was prescribed pharmacological treatments that failed to alleviate the post-surgical pain.

Between the ages of thirty and forty, my life was defined by significant challenges with food intolerances, Gut problems, and chronic fatigue. I was eventually diagnosed with systemic candida. My days were filled with dietary experiments, restrictions, and adjustments, each new attempt to restore balance. But my body resisted. I suffered migraines fifteen days a month, sometimes more. The medical community offered no solutions beyond temporary Demerol injections or Imitrex prescriptions, which left me incapacitated and unable to be productive at work. These migraines stripped me of productivity, damaged my self-esteem, and narrowed my world.

On top of this, migraines struck with brutal regularity, of fifteen days out of every month, sometimes more. They stole my ability to work

consistently, to participate in life. I lost work, I lost opportunities, and I lost faith in my body. My life grew smaller. My self-esteem eroded even further. Relationships, especially intimate ones, were interrupted by the unpredictability of my health. I could not depend on myself, and therefore, I feared others could not rely on me either.

Dr. Stephen Bloor

I met Caroline just as I opened my private practice in Springfield Illinois back in 1994 after 3 years of grueling residency training and divorcing my first wife, Emily, who I rarely saw throughout most of my training. I trained in Primary Care back when 120 hour workweeks were common for many resident physicians and we were taught that becoming a physician was a calling with status and once we became a full-fledge attending physician we were set for life, and no one would question or decisions again.

While I was basking in the glow of my new-found independence and prowess as the newest primary care physician in my moderately large city of about 100,000, in walked Caroline, a 35 year old woman recovering from a recent major operation that left her with a laundry-list of complaints ranging from chronic post-operative pain, food intolerance, runny stools, abdominal pain, chronic fatigue, and most recently systemic candida.

When my Medical Assistant shared her list of complaints I felt a keen sense of dread. I went into medicine to heal and cure, not hold the hand of the walking well with tons of vague ailments. During my hospital training I was taught to ignore all of these ailments and focus on the real stuff going on like Heart Attacks, Strokes, Pulmonary Embolisms – stuff that could finish off my patients in a blaze and that I had powerful medications and treatments to vanquish. I loved heroic medicine because that let me be the hero.

I really didn't learn much of anything about chronic diseases, those were the things we noted in the chart and quickly moved onto acute event that forced them to seek out care in the hospital. That's what a real doctor does, he saves patients from the brink of death with powerful medicines, the help of specialists and others.

I took a deep breath before I entered the room, collecting myself for an onslaught of complaints that I likely wasn't going to be able to do much about in 15 short minutes we'd spend together. Yes, I could try to make it a 30-minute visit, but that meant bumping into Mildred's visit and I knew her Blood Pressure was out of control, and she didn't want to take her medications – so I had another long visit just after Carolines. So, I braced myself and entered the room with a smile and quickly began to explain that I didn't have much time and she had a lot of concerns, so maybe we can focus on one today and take up the others at a subsequent visit.

She burst out crying and told me that was what all the doctors were telling her, and things are getting worse, won't I please help her with all her pain and exhaustion, she needed to get back to work as her health was beginning to disrupt her job. Oh, I thought, she wants an excuse from work, I guess I could do that at least as I don't think there is much else that I'm going to be able to do for her today.

"Systemic Candida" was the latest fad some of the charlatans out there were pushing, putting women on high dose anti-fungals and telling them it would take months to cure, and they'd have to change what they ate, their exercise, and lots of other stuff to begin to overcome the dreaded Candida. Usually that started because of excessive use of antibiotics, which may also be contributing to her GI stuff, that could be something, I need to make sure we get to that, but so little time.

Caroline adds Migraines and a possible history of Lyme's disease – two more very challenging things to figure out that take some time and require a good deal of discussion. What do I do? Well, I'm going to make clear I am only going to help her with her worst pain today, get into that and then push-off the rest of this for future visits. How can she think we can cover all this stuff in 15 minutes?

She must be doctor-shopping, she has all these conditions listed. Is she just trying to get some Vicodin from me? What is she really after? What is the hidden agenda here? Well, I'll do my best to develop some kind of rapport here, give her enough Vicodin to last a few weeks and prepare for her next visit. We'll have to make it a double appointment. Too bad I

don't get paid anymore for that, but she has terrible insurance to add insult to injury. But, it's a city where word gets around, so I'll do my best.

OK, we talked through the plan, she isn't happy with it but accepting of it. Sounds like she'll be coming back for a longer visit in 4-6 weeks. Whew! Made it through that one without too much stress, on to Mildred.

Dr. Bloor is an amalgamated character. He represents a synthesis of the "typical" primary care physician operating during this time period. From one perspective, Stephen can be considered an amalgamation of the more than 100 years of collective experience to be found among Salus Forum participants. From another more personal perspective, Dr. Bloor resides in each of us based on our own distinctive way of being and growing in the world of healthcare.

Stephen Bloor is confronting a multi-faceted health care challenge. His mindset is to focus on one of Caroline's problems and either ignore or defer the other problems. The emerging Salus-based approach to health mostly focuses on helping someone like Caroline with multiple problems that are often interwoven. Salus provides tactics and strategies associated with empowering individuals to make lasting health-related behavioral changes.

These changes are the cornerstone in defining an integrative sense of well-being. As in most emerging fields of human service, Salus-based medicine is highly diverse in terms of both perspectives on and knowledge about health. A diverse set of strategies is also engaged by the health-based Salus practitioner—these strategies reflecting the complexities of successfully managing wellness. The kind of wellness that Caroline dreams of but has never found in her life.

Salus-based perspectives, policies, and practices (Salus-P3) regarding health care are closely aligned with the implementation of recommendations for well-being from a wide range of

disciplinary categories and fields of knowledge. An important role can be played by the Salus clinician in assisting clients such as Caroline to bridge the gap between and integrate several different disciplines: biology, environmental studies, psychology, neurobiology, and spirituality. Together, these interwoven disciplines provide what might best be called a biopsychosocial perspective that guides a Salus-based approach to best health.

The Biopsychosocial Perspective

In this book, we identify some of the areas that might be engaged by the Salus-based perspective and practices of health care. In some cases, these are areas of knowledge about health. In other cases, they are areas of healthy practice. Salus perspectives, policies, and practices (Salus-P3) involve both diverse sources of knowledge and advocating for a diverse set of practices.

Most importantly, the Salus clinician is a source of provocative and generative questions that are posed to patients (clients) such as Caroline. These questions primarily concern the client's exploration of what constitutes "health" for them and how they can best achieve this state. The following are some of the domains and disciplines that a Salus-P3 health care clinician might enter and in which they might be most helpful to their client.

Biology of Health Care: Dis-ease

Health-based Salus advocates often gain immediate credibility if they first address issues related to the biology of health care. This includes addressing challenges associated with the origination of illness and the promotion of well-being on a physiological level. Naturally, addressing biology alone will not support the management or amelioration of ill health. Illness or disease are synonymous in the description of physiological disorders. Dis-ease is the absence of ease. This certainly was the case with Caroline. She was in profound unease. It is useful to remember that the word "disease" has "ease" as a derivative.

The objective from a biological level is to prevent dis-ease and support ease of physiological harmony. A Salus advocate will be familiar with the common denominators regarding how we humans resort to ill health as opposed to well-being. At the root of dis-ease is stress. Stress is the familiar term we use for our physical constitution not being in harmony. Trauma is also important in conceptualizing how physiology becomes stressed. Both of these concepts are fundamental in understanding the physiological basis of inflammation, which contributes to dis-ease.

Stress and Trauma

Is trauma the same thing as stress? No. Certain types of stress are not only not associated with trauma but are actually quite beneficial to the sustained health of a patient or client. Trauma is often a sudden event that dramatically explodes into our lives and changes the way we perceive the world. More generally, trauma is associated with a specific, intrusive event or with a series of related intrusive events, whether they are emotional or the blunt force physiological invasion of our homeostatic biology.

Stress, on the other hand, tends to be related to an ongoing environmental condition and to one's own perception of and reactions to this environmental condition. While a traumatic event is often immediately life-threatening, stress doesn't typically constitute an immediate existential threat. We are not "killed" by a pending job performance review or a pile of unpaid bills. Rather, the challenging job or financial hardship is a long-term source of potential threat. Stress is usually sustained over time rather than being a sudden intrusion.

Positive and Negative Stress

Negative stress is defined as anything that poses a sustained challenge or threat to our well-being. Conversely, positive stress is defined as anything that poses a sustained challenge, which

leads to new learning, excitement, or an ultimate release of tension. For instance, we can find the climbing of a rock face to be challenging, but also exciting and highly rewarding—just as learning and mastering a difficult piano score can be a source of initial anxiety and later a source of personal pride. Mihaly Csikszentmihalyi (1990) describes this state of positive stress as a threshold between anxiety and boredom—and provides a label ("flow") for the remarkable experience associated with the state when we are navigating the rock face or music score.

Of greatest importance for the Salus advocate is the role played by positive stressors as motivators for change and guides for movement towards a more harmonic state of wellness. While on the rockface, we recognize that some time each week needs to be set aside for exercise and outdoor experience, whether it is climbing the rock face or running five miles. While playing the piano, we come to recognize that it is important for us to take care of our health if we are to continue enjoying the music. We seek out "flow" and recognize that life is worth living in health. We want to frequently find flow in our work, our family, and our time of re-creation—so we try to remain healthy.

Salus-P3 advocates can offer an even more expansive framework regarding stress. While stress is often referred to as a negative factor, it is an essential part of our life. Without any stress, our lives would be boring and would probably feel pointless. Caroline might be viewing her stress only in negative terms; however, elements of her life might be stressful (such as swimming in Lake Springfield) but gratifying and life-giving.

We would be living at one end of Csikszentmihalyi's spectrum: boredom (and stagnation). However, stress that undermines both our mental and physical health resides at the other end of Csikszentmihalyi's spectrum: anxiety (and overwhelm). Anxiety-filled stress is considered negative, while flow-filled stress is considered positive – an important discrimination to be made by

a Salus-oriented practitioner when helping their client "manage his 'stress'.".

While in this book we shall be focusing on negative stress—the kind that leads to disease—there are also times when we will attend to the positive side of stress. We will be exploring behaviors that are self-rewarding (auto-telic), that provide one with a non-drug-based "high" (the "flow" experience), and that provide the gratification of exhibited competency.

However, it is important to note that negative stress is typically the focus of an early session: we start with what isn't working or what threatens our well-being. Negative stress results from any challenge or threat to our homeostasis or sense of normal functioning—regardless of whether it is real or perceived. The response to this threat remains the same physiologically, whether or not the threat actually happens. Just the anticipated fear that the threat will happen is stressful.

The Physiology as well as the Psychology of Stress

One other critical factor must be identified. While stress is often considered only a psychological/emotional experience, there are important biological ramifications, as well as broader sociological implications with regard to the precipitation of stressful life conditions. As Craig McEwen has noted, the exclusive focus on the psychological dimension of stress results in the neglect of biological elements of stress. While positive stress yields short-term physiological benefits, these sources of stress tend to be short-term. Conversely, chronic or toxic stress is usually long-term. They become a "given" in one's life. These negative forms of stress can have immediate and long-term effects on biology that interfere with health.

From a physiological perspective, stress responses are the body's activation of biological systems to provide a sense of safety and protection. Interestingly, this activation of protection can inadvertently cause the reverse effect and challenge our

physiology if it is regularly activated with intrusive threats. This activation is based in the HPA axis (hypothalamic-pituitary-adrenal axis) and is directed toward restoration of normal functioning and eventual reduction in bodily alarm from the threat.

Chronicity, Weathering, and Stress Management

Chronic activation of the stress response can lead to wear and tear ("weathering') that eventually predisposes an individual to disease. When exposed to intense and unwelcomed stress, we begin to feel powerless and inevitably vulnerable to a stress-inducing environment. We become not just stressed IN our personal life and work environment; we also become stressed ABOUT living this life and working in this environment. We believe (and feel) that we have no control over our life or our exposure to stress. In other words, we become stressed about being stressed. It is a vicious circle – a "double whammy."

For instance, as Craig McEwen points out, the fact of racism often creates stress for Black people. Physiological weathering of the African American adults is a result. Racism is not controllable by the individual Black person. It might not be recognized as a constant in one's life. Similar "weathering" conditions exist among many people who feel oppressed, diminished by society, or threatened with physical violence.

Michael Marmot found that people in occupations lower in control (lower in the British civil service) had higher health risks (weathering), which he attributed to greater stress (but likely unrecognized by those experiencing it). Robert Sapolsky has similarly reported on the strong, disturbing relationship between social status, negative physiological stress, and poor health.

While the vicious circle we have just described suggests that we can do a "wonderfully" destructive job of being stressed about stress and social status, it also suggests that we can do the opposite. We can reduce our stress regarding stress and actually

begin to manage our stress. A Salus P3 point of view provides a foundation for the proposition that people may be able to recognize and control the stress they face. Even more importantly, a Salus-P3 approach can be of great help to our client if we address two fundamental questions about stress: (1) Is stress always bad? When is stress a good thing in your life? And (2) when stress is harming you, what do you do about it?

The following are some more specific questions that you, as a Salus-oriented clinician, might pose to your client:

- What physical indicators tell you that you're stressed?
- What are the primarily sources of your stress: internal (inside your head and heart) or external (family, work environment, physical environment, finances, life habits and demands, etc.)?
- What are your primary internal sources of stress: fear of failure, performance anxiety, generalized worry/fear of the unknown?
- What are your primary external sources of stress: financial, relationship, family, death, moving, occupation change?
- How do you currently manage your stress?

There are also several more provocative questions to be posed with our client:

- Do you ever get stressed about being stressed?
- What would happen if you became healthier? How would you be different? How might your relationships with other people be different?
- What would you have to give up in order to lead a healthier and less stress-filled life?

So, what happens when the answers to these questions always lead to a dead end? We are faced with the realization that negative stress has become a way of life for us. Even worse, what happens to us when we come to the painful (and stressful) realization that repeated trauma—along with recurrent stress—has become more the norm than the occasional happenstance in our life? Frankly, it is a "perfect storm" with trauma and stress joining in a whipsaw of our psyche and physiology.

The Perfect Storm: Trauma Meets Stress

As we look specifically at the biological processes associated with stress united with trauma, we find nothing but bad news. The trauma might "hard"—relating to an ongoing abusive relationship in our life (such as a marriage filled with physical violence), or it might concern a recurrent physiological intrusion (such as a migraine or series of minor heart attacks). There are "soft" traumas, which are usually minor occurrences (such as a marital argument, severe headache, or atrial fibrillation) that trigger our memory of much more severe experiences. Both the "hard" and "soft" forms of trauma trigger stress, which in turn increases the chances of the trauma recurring.

Reciprocity and Stress Ruts

Under sustained conditions of stress (especially unwelcomed stress), we become increasingly sensitive to events that are potentially traumatizing. What used to be a source of mild stress now becomes highly stressful –even traumatizing. Furthermore, it is not just the sustained presence of stress that is stressful. As Craig McEwen has noted, the unpredictability of those events and factors that induce stress. What leads especially to toxic stress is the lack of valid predictions. As we will note later in this book, uncertainty and lack of control are major stressors.

Our mental categorization of trauma and stress becomes part of our daily life. Soft trauma becomes stressful, leading to the

production (or at least recall) of hard trauma. Hard trauma is inherently stressful; however, the stress increases the severity of trauma. A violence-filled home is stressful and conducive to more violence—especially if the violence is hard to predict. Uncertain anticipation of the pain precipitated by a migraine or stroke is stress-producing, resulting in the increased probability of another migraine or stroke.

With all of this reciprocity and with our entwinement in a vicious circle, we end up with a *Stress Rut*. We become more easily stressed and thus traumatized by once-minor intrusions. The world becomes increasingly unsafe for us, in fact, as well as in our state of anticipation. Everything that challenges us is heightened. The lack of safety results in large part from the lack of social support. The notion of toxic stress suggests that this stress is chronic (and toxic) because it is experienced in the absence of strong social supports. People with those supports are less likely to experience the biological costs of chronic stress.

It gets even more complex and bleak. In essence, our body remembers past stress and trauma. What does this mean? Basically, it means that our body, along with our brain, stores information (negative and positive). Our body is prepared for the repetition of events from earlier in our life and makes adjustments (involving such diverse functions of our body as our hormonal system, reproductive system, and sleep cycles). This means that our body operates as an integrated system that demands "all hands onboard" when a real, anticipated, or imagined trauma occurs.

We will add one additional factor. This is the impact on our social relationships when stress and trauma come together. Increasingly, in the field of health care (and in the emerging field of Salus-oriented health care), a multi-disciplinary perspective has emerged: biological, psychological, and social processes are integrally involved in physical illness and health, medical diagnosis, medical treatment, and recovery from ill health.

Salus and Stress

We propose that a holistic, integrative biopsychosocial perspective on health is fundamental to any Salus-oriented strategy for managing stress. Seeing the health care world through a biopsychosocial lens is particularly important when considering the interplay between stress and trauma. When we experience either soft or hard trauma and find ourselves under recurrent stress, our social relationships are often blown up – or at least distorted. We tend to become preoccupied with our own welfare. Our cognitive functions are impaired (we become cognitively focused and rigid). We see life through a distorted lens that favors malevolent forces over social support and anticipates attacks rather than a helping hand.

Essentially, under conditions of anticipated attack, we are running away from the imagined or actual "lion" (challenge), with all of our attention and physical energy being devoted to saving our own life (Sapolsky, 2004). We are not in the mood for building new relationships or enhancing existing relationships -- unless these relationships can help us escape the lion. This type of relationship is often called instrumental or functional. Today, we often speak of "transactional" relationships and contrast these with relationships that are based on shared concern for one another's welfare.

It is only after we have escaped the lion that we can devote ourselves to nurturing non-transactional relationships. Post-lion recovery can promote intimacy and allow us to be vulnerable (which in turn leads to our own continuing maturation and emotional development). We can sit around the campfire, roast marshmallows, and talk about our successful race away from the lion. But this can take place only if we have escaped the lion. Otherwise, the lion is sitting around the fire with their friends, talking about the great meal just consumed (gnawing on our left leg).

The problem arises when we are always imagining that lions are chasing us. In other words, when we are always under stress in a world and life that is filled with lions. Everything holds the potential of being traumatizing or at least stressful. Under these conditions, there is never time to form or sustain a meaningful, growth-enhancing relationship. We can never find the time or energy to engage in anything besides instrumental relationships.

This means that we must seek out relationships that are supportive in nature. They might be "transactional" in that they serve a specific purpose (protecting, educating, empathizing). The critical matter is that they are often not easy to establish under conditions of stress. We are often unlikely to find any meaningful support among people around us when we are confronting sustained stress and impending trauma.

We are standing alone, with no one to hold our hand or offering support (and helpful advice) about how we might best address stress and trauma. This is where a Salus-oriented clinician, coach, or consultant can be of greatest value. If our client can begin addressing stress and trauma issues successfully, then they can begin building meaningful and supportive relationships. A new, constructive cycle is engaged.

Inflammation, Stress, and Disease

If the prospect of always running away from lions and finding no time for meaningful relationships is not sufficient to convince our potential clients that Salus-oriented health care services can be of value, then the prospect of reducing inflammation and disease might get their attention. An increasing body of evidence shows that we are increasingly vulnerable to chronic inflammation if we are living with chronic stress. Inflammation, in turn, causes and advances many common diseases. The negative impact goes even deeper and wider. Our brain, as well as our body, can be impacted: neuroinflammation is inflammation of neural tissue. It may be initiated in response to a variety of cues, including

infection, traumatic brain injury, toxic metabolites, or autoimmunity.

The good news is that our more informed understanding of inflammation opens new possibilities for treatment and therapy that focus on blocking the inflammatory processes. Here is the critical point to be made: every chronic disease is an inflammatory response to the body's inability to heal. The bodily inability to heal, in turn, often is attributable to the body's ongoing, distracted engagement in stress-related behavior.

There is no time for the healing of bodily functions if I am always diverting attention and energy away from this healing to escape from the lion. "I will get to the inflammation-reducing procedures later—right now I am trying to remain alive." But the day for repair never comes. And the diseases mount up – leading to an even more stressful life, a greater sense of helplessness, and greater vulnerability to trauma.

The HPA Axis

We can now turn briefly to the Hypothalamic-Pituitary-Adrenal (HPA) Axis, which plays such an important role in the interplay between stress and trauma. This axis can be our helpmate when we are assuming a Salus perspective. It can also be the enemy. The HPA axis is a complicated set of relationships and signals that exist between the hypothalamus, the pituitary gland (a pea-shaped structure located below the thalamus in the brain), and the adrenal glands (a small conical organ located on top of the kidneys). The delicate intertwining of the hypothalamus, adrenal glands, and pituitary gland works in a very straightforward manner to activate the central nervous system. This activation, in turn, is a major neuroendocrine system that dynamically controls our stress response, digestion, and immune system.

It is important to recognize that these complex interactions also control our emotions, moods, energy levels, and sexuality. While research with rats makes a distinction between social stress and

physical stress, the HPA axis is involved in regulating all forms and sources of stress, regardless of how it is experienced. The HPA dynamic becomes even more complex when we acknowledge that several neurotransmitters are involved in regulating the HPA axis. Furthermore, there is evidence that oxytocin, a neurochemical resulting from positive social and sexual experiences, suppresses the HPA axis—thereby counteracting the stress response and promoting the more positive health aspects of human nature.

The Gut-Brain Connection

We wish to introduce another important (and often neglected) sector that actively interacts with other physical and mental processes ongoing in our body—and that needs to be acknowledged in any effective and systemic health-based engagement. This sector is the Gut (our lower abdominal digestive system). The Gut microbiome is a vast ecosystem that contains many diverse organisms such as bacteria, yeasts, fungi, viruses, and protozoans. These organisms live (and hopefully thrive) in our digestive pipes, which collectively weigh up to 2kg (heavier than the average brain).

The Gut is increasingly treated by scientists as an organ in its own right. Each Gut contains diverse bacteria, many of which are vital—breaking down food and toxins, making vitamins, and training our immune systems. Many major neurotransmitters and brain proteins are found in the Gut. Furthermore, the Gut contains 100 million neurons (more than are found in the spinal cord). It seems that our Gut is a highly complex biological system—it is not simply our full or empty "tummy".

Genetics-Epigenetics

As we come to the end of this brief journey through the interplay in human biology, environment, psychology, and neurobiology, it is important that we understand and have appreciation for the

role played by the basic building block of biology: the gene. We must acknowledge that social experiences can shape gene expression. With this interplay in mind, we must acknowledge the critical role played by numerous genetic variations and epigenetic regulations.

They play a role (in complex interaction) not only in creating and sustaining a healthy body, but also in creating multifactorial diseases– such as diabetes, heart disease, and cancer. This genetic dysfunction is the focus of many current research projects concerning the interplay between stressful experiences, levels of social support, gene expression, and health. The interplay among these critical factors is proving to be a huge challenge, adding further to our understanding and appreciation of the vast array of reasons why some people have more health disruption than others.

As in the case of all forms of human biology (and the biology of all living entities), the role played by genetics can never be separated from the role played by both the environment in which the neonate lives in their mother's womb and the environmental factors that influence development after birth. The nature/nurture debate is no longer viable.

A highly interactive model of human life (and human health) is now dominant in our understanding of and appreciation for the complex interplay between genetics, the womb, and life experiences. Adult health depends on an interweaving of inheritance, nutrition, and the physical and social environment throughout prenatal development and childhood—an important lesson to be conveyed to a client by a knowledgeable Salus-oriented clinician.

Nutrition

Each of us has many choices to make about what we can import from our external environment (plants, animals) and transform into part of our internal environment (converting food to bodily

energy and restoration). If we are moderately well off economically, we have sufficient funds to select what we consume. Then the choices are many. And the consequences of the choices being made are significant in terms of our health. In the role of Salus-oriented clinician, we can facilitate the reflection of our clients about nutrition and enter into a dialogue about the food choices being made. This dialogue should take into account the nutrients in food, how the body uses nutrients, and the relationship between diet, health, and disease.

At the heart of the matter is our inclination to purchase, prepare, and consume food that might be delicious (pumped up with sugar and fat), but does not play very nicely with our body or mind (inducing inflammation). Here is the bottom line: we need to purchase whole foods and organically raised foods. This is not easy if we are poor and live in a nutritional desert or simply can't afford 'healthy food."

A Salus focus on nutrition must include increased access to food that is non-inflammatory. This means finding substitutes for the widely available, heavily marketed, and sometimes less expensive inflammatory foods such as dairy products, margarine, processed/cured meats, vegetable oils, refined carbohydrates, sugar, and tropical fruits (this is not an exhaustive list).

Most of us are familiar with the deleterious impact of most items on this list. It is often a matter of finding acceptable substitutes for these seductive entities. This is not easy when living in a societally repressed neighborhood or when saturated with advertisements regarding the latest "bargain," the new "great-tasting" snack, or the doctor-certified "healthy" alternative.

We just provided a list of what we should not consume. Fortunately, other lists contain appetizing options. These lists can be found in many places on the Internet but should be reviewed and downloaded with care. Is there credible evidence to support the assertions being made? Is this list simply a promotion

financed by a specific industry that extolls one food group while disparaging another food group (such as the condemnation of fats by the sugar industry and complementary condemnation of sugar by industries relying on fats for enhancing flavor and texture)?

The simplest pieces of advice to be given are: (1) try enhancing the flavor of food with natural spices and herbs, and (2) consider consuming vitamins that are contained in food (rather than in supplements). Another piece of advice: wisdom is to be found in the sage insights offered by many of the older schools of healthcare in the West (e.g. homeopathy) and the perspectives and practices embedded in many Eastern health care traditions.

Exercise

When we turn to exercise, we focus on the way in which we engage our world. We know that brain functions shift when we are moving through an environment and when our visual field is changing (as a result of this movement). We also know that muscular activities activate other mental and bodily functions. Just standing at a desk rather than sitting makes a difference concerning our mental and physical state (as media commercials are now telling us in the promotion of standing desks).

The key point, however, concerns the matter of confronting stress and trauma. As in the case of nutrition, we all know that exercise is important to our health. It is a matter of setting this as a higher priority. It is also a matter of living in the right location (where it is safe to exercise outside) or finding accessible, affordable resources (such as a nearby and inexpensive community or YMCA sports facility). We can also benefit from social connections and support: a weekly walking group, family-time at a neighborhood indoor pool, Pilate classes for older adults held during the evening at a local high school.

There is one rather paradoxical source of exercise. This is finding a venue for competition. It seems that one way to invite more attention to this way of using the external environment for our

benefit is to re-invoke the lion!! When we run away from the lion, we are making use of the energy that has been generated for the chase. The lion can be an after-hours basketball team that we are playing this week; or the lion can be the challenge of learning a new move at the adult dance class held at our YWCA.

Avoid, Froze or Exercise

A vital key to stress management is to reduce its causes. However, for many people, the avoidance of stress-related challenges is impossible. As Craig McEwen notes, social policy could help reduce toxic stress by providing economic security and safe neighborhoods. In many instances, the exercise solutions we have identified are available only to those in the middle and upper-middle class.

As in the case of nutritional islands, there are exercise islands where no sports facilities are available, and it is not safe to be doing any physical activity outside the home. Furthermore, for many people living in poverty or the lower middle class, there are many real lions to be confronted. These are lions that threaten our ability to afford a dinner for our family or lions that threaten job security, job safety, or the prospect of a financially viable life after retirement.

Unfortunately, even if we can afford the time and money to exercise, we often are too weak or too slow to move, swim, or compete in a sport at our nearby sports center. We don't exercise because we don't exercise enough to be strong enough to exercise! In life, we are unable to outduel the lion (unless we are Tarzan) or outrun the lion (unless we are a Marvel comic character).

As a result, we tend to choose the option that is selected by most other weak and slow animals (such as small rodents): we freeze in place and hope that the lion will not recognize that we are nearby. We haven't learned much from the rodents about what we do after we have been frozen in place for several minutes (with the lion moving on after ignoring us or neglecting to see us).

The rodent will begin shaking and shivering—a valuable way in which to burn off the accumulated and blocked (frozen) energy that was generated for the unwise (and bypassed) flight or fight. As very stupid human beings we tend to stay frozen for a much longer period of time (not being able to determine when the imagined lion has moved on). Then we go back to work or try to find ways that will avoid our lion in the future. We do nothing to burn off the accumulated energy. We don't exercise. And the unspent energy (adrenaline and related hormones) will be quite mischievous, working in a very destructive manner on all of our bodily and mental functions.

So, as weak and slow human beings, we must exercise. As a Salus-oriented clinician, we can help our middle-class clients identify ways that they can fit exercise into their busy lives and ways in which they can determine which type(s) of exercise are of greatest benefit (and most enjoyable). As advocates for health, we can fight for public policies and priorities that bring exercise facilities back to our impoverished neighborhoods. As social entrepreneurs, we can help find funding for reviving intercity YMCAs and YWCAs, and can help build working collaborations between schools, churches, and community centers to open space and facilities for shared movement activities, friendly competition, and perhaps a bit of nutritional education.

Here is our partial list of exercise options (some traditional and some nontraditional) (you can add to this list your own favorites): Walking, Yoga, Cardiovascular movement, Free Weights, Karate, Running, Swimming, Bicycling, Dance, and even just a little bit of stretching—and how about shaking like that engaged by the much smarter rodents (or is this what we do when we dance!!).

Sleep

Sleep is obviously a critical element in the restoration of health and prevention of disease. From a Salus perspective, we can be of

great value to our clients if we help them identify ways in which to extend the duration of their sleep (goal: 7-8 solid hours of sleep per night), as well as improve the quality of sleep (the goal being to spend significant time in at least three of the four stages of sleep)

Many of the symptoms associated with sleep problems are obvious: difficulty falling asleep, difficulty staying asleep throughout the night, trouble getting back to sleep when awake during the night. And waking up too early. The impact of inadequate or low-quality sleep can be pronounced and have a wide-ranging impact on our waking life: not feeling refreshed after sleep (non-restorative sleep), feelings of fatigue, low energy, or being always tired, struggles concentrating, mood swings, aggression and irritability, problems at work, school, or in relationships. These latter symptoms are often not directly attributed to sleep problems. They have many other sources. Yet sleep is often primary.

Sleep quantity is impacted by many factors. Many people are "too busy" and have too many other priorities and life demands to set aside 7-8 hours for sleep. Many people might be in bed for 7-8 hours, but a significant proportion of this time is spent in a waking state or in fragmented sleep (dispersed states of sleep and wakefulness) Diurnal (bi-phasic) sleep is very common: 3-4 hours of sleep at start of the night and 2-3 hours at the end of the night with a period of wakefulness between these two sleep episodes. How does one build a bridge between these two episodes? It is especially common for the bridge to grow longer and become harder to cross as we age; long bridges are also often associated with alcohol consumption and late meals.

Sleep quality relates to what we now know about the four stages of sleep—each of which proves valuable in restoration, reorganization, and storage of memories and general capacity to remain alert during the day. Stage three and four (and stage four in particular) are often not found in our sleep as we age, and are

suppressed in our sleep if we take sleep aids (especially strong medications that we can only access with a prescription)

How do we, as Salus-oriented clinicians and health-oriented advisors, assist our patients/clients regarding their sleep? First, it is important for our clients to discover their own preferred sleep cycle: when does our body say we are ready for sleep? And when does our body say we're ready to wake up? This cycle differs from person to person. And there tends to be a shift to earlier sleep and earlier wake time as we grow older.

Having identified the appropriate cycle, we can establish a regular time to go to bed in the evening and wake up in the morning. We can encourage our sleep-challenged client to abstain from alcohol immediately before going to bed (the wake-up six hours later is related to alcohol withdrawal). The other obvious recommendations concern reduced caffeine consumption (none after one [pm]), and early evening mealtimes (the six-hour digestion period ends, resulting in increased arousal sometime during the night)

There are many other paths to high-quality sleep. Engaging the Salus perspective, we have identified more than 70 pathways (Bergquist, 2019b). A list of more than 70 pathways includes strategies related to *lifestyle sleep enhancements* (e.g. exercise, diet, length of sleep) and *sleep preparation* (e.g. reading, relaxation, and taking a hot shower). The list includes ways to create *a sleep-enhancing room environment* (e.g. bedroom temperature, darkness) and the *environment of the bed* in which we are sleeping (e.g. size of bed, type of pillow, type of sheet).

This list is completed with the identification of many *sleep aids* (ranging from CPAP and other sleep-inducing machines to the use of essential oils, melatonin, and over-the-counter sleep aids). A Salus-oriented clinician or health-oriented coach can bring this list (or their own list) to the sessions and help their client identify the best for them to use – or better yet, devise a plan to test out

various options and record the impact on their own sleep duration and quality. Sleep is gold when it comes to health – and sleep should be mined and cherished as if it were gold.

Toxins

Toxins are very important when we (via Salus) survey the sources of health—and the sources of both our clients' injuries and their illnesses. There are several different kinds of toxins. First, there is a cluster of toxins known as "neurotoxins". These toxins are substances that alter the structure or function of the nervous system. There are also environmental toxins, including cancer-causing chemicals and endocrine disruptors. They are both human-made and naturally occurring—and can harm our health by disrupting sensitive biological systems.

Finally, some toxins are often not recognized – at least by those engaged in environmental advocacy. These are toxins that we are labeling: "cultural toxins." These are the unhealthy interpersonal conditions that exist in our workplace and community. There are also "political toxins." As citizens, we rely on the leadership of our governments (local, state, and federal) to protect us from irresponsible parties polluting our environment. We are often disappointed in the policies and protective actions taken in this regard.

The Healthcare Alternatives: Differing Pathways to Health

As early as the time of Socrates and Aristotle, there were the "correct" ways to treat illness and the "wrong" ways. While Hippocrates created the long-established code of ethics for those engaged in the provision of healthcare, he advocated the "wrong" kind of treatment programs. These "wrong" ways have continued to be endorsed and provided over the many centuries since Hippocrates. And many of the alternative ways would eventually be acknowledged as the "right" way to treat a patient.

Alternatives of the Last Two Centuries

During the 19th Century and early 20th Century, many alternative approaches to the established "allopathic" treatment modes were introduced. An alternative perspective, for instance, was offered by Samual Thomson and the Thomsonians, who suggested that all diseases resulted from exposure to cold weather. We still tend to abide by this suggestion, declaring to our children that they will get the "death of cold" if they venture outside without their warm coat and gloves.

A quite dramatic alternative perspective was offered by Mary Baker Eddy and the Christian Scientist during the late 19th century and the 20th Century in their declaration that disease doesn't exist at all. Instead, there is the "error" of believing that life exists independent of a perfect reality created by an omnipotent creator. Today, this perspective lingers on the edge of some Asian, mindfulness, and bio-centric views of human existence and illness.

There were also many alternative medical treatments offered during the 19th and 20th centuries—many propelled by the strong spirit of individualism and attendant belief that we can be "our own physician." (Starr, 1982, p. 59). Healing remedies could be purchased at the corner store or over the counter at early pharmacies and drug stores. Lydia Pinkham's Vegetable Compound was sold for many years as a cure for practically anything that ails one. This lure of the all-in-one treatment plan continues to the present time with the testosterone-activating pills that address all male ills, and the All-in-One vitamin pills that cure everyone's ailments.

If pills have not been the answer to our illnesses, then perhaps it is a matter of finding a healing environment. Finding the sanctuary of health that has been sought throughout human history (one need only be reminded of Ponce De Lion's search for the fountain of youth). Controversial practices, such as those

provided by the Kellogg brothers (of cereal fame), ranged from hydrotherapies to new meatless diets (which of course included their newly invented cereals). We also found a new (or renewed) emphasis on the environment of health to be found in the food being eaten and the substances being avoided (including alcohol and addictive drugs). Sylvester Graham, for instance, not only invented the "nutritious" Graham cracker but also actively promoted temperance (Duffy, 1993, p. 88).

Alternatives of the Present Century

Alternative medical perspectives and practices have continued to be present, challenging the established ways of conceiving and treating illness and injury. While many traditional medical institutions have sought to incorporate some of these perspectives and practices as "complements" to their preferred way of viewing and treating medical issues, there are still alternative viewpoints that remain fervently independent of the subordination inherent in the use of terms such as "complementary" (or "supplemental").

These alternatives offer a wide variety of perspectives regarding healthcare and a diverse set of healthcare practices.

Oral Ingested Treatments: Some of the alternatives follow in the tradition of Lydia Pinkham—but with a better evidence-based argument to be made for their use. These include not only traditional vitamin pills and mineral-based supplements (such as Potassium and Magnesium), but also many herbal, floral, and plant-based medicines (often with non-Western origins). There are also numerous pills used to combat sleeplessness. The most widely used and perhaps most appropriate is Melatonin. Sometimes, adding nutritional supplements may not be the most efficient or effective means of therapeutic intervention. Some modalities include the removal of substances such as intermittent fasting, selective diets, and the elimination of food allergens or intolerance.

Injected or Intravenous Treatments: more "dramatic" (and often controversial) treatments usually involve the introduction of some entities directly into the body. IV Therapies for detoxification and cleansing can be introduced. Prolotherapy, as well as Eboo (Extracorporeal Blood Oxygenation and Ozonation) Therapy, 10/20 Pass Ozone Therapy Treatments, and plasma replacement are gaining in popularity in the functional medicine realm.

Also, extreme IV therapies like Plasma replacement are widely touted as a means of cleansing the blood through a dialysis-like process. Additionally, manipulating the microbial milieu to restore balance through microbial replacement therapies has proven to be a safe and effective treatment for Gut dysbiosis. Microbial replacement therapies offer an attractive alternative to restorative health through IV. Another kind of "injection" is also of great interest to many people (including those traditional healthcare institutions that feature "complementary" medicine). This mode of treatment is acupuncture, a long-established, Asian-based mode of treating everything from neuropathy to trauma.

Environmental Treatments: The environment is also becoming a site for treating illnesses or preventing potential diseases. The Kellogg brothers got it right in suggesting that water-based hydrotherapy can be a healing modality. There is also a cluster of therapies that focus on coldness. A plunge into cold water or a breath of cold air is not the source of illness as Thomson proposed; rather, it can be a source of prevention or treatment.

There is also an even more dramatic use of hyperbaric oxygen. Hyperbaric oxygen therapy treats wounds and other medical conditions by supplying you with 100% oxygen inside a special chamber. It heals damaged tissue by helping your body grow new skin, blood vessels, and connective tissues. Notable and worth considering are also Electromagnetic therapies that use electromagnetic fields or pulses (such as pulsed electromagnetic field therapy, or PEMF) to promote healing, reduce pain, or

improve function, and Iridology, a diagnostic method based on examining patterns in the iris.

It is not only water and air that can be healing, but also light and aromas. As a way to combat seasonal depression (caused in large part by shorter daylight hours), there are light devices and full-spectrum lights that compensate for the reduced sunlight and help alleviate inflammation caused by various sources. We may also find relief from illness in the aromas to which we are introduced and in the Therapeutic Essential Oils we diffuse or apply to our skin.

Some environments support us in adjusting our posture or movement, like chiropractic, kinesiology, and physical therapy. As trauma psychologist Bessel Van Der Kolk highlights, our bodies reflect trauma, anxiety, and fear (Van Der Kolk, 2014). Spaces that promote movement and bodily realignment can foster healing.

Ultimately, other companions can also help create a healthy environment. These are not board-certified healthcare providers. Instead, they are animals that hold the potential to draw the pain out of us and reintroduce hope and healing. There are equestrian therapies. Riding a horse can be healing. Some canine companions provide emotional support to people who are living with pain or living in health-destroying isolation from other people.

Information-Based Prevention: An essential source of prevention—and perhaps healing—is to be found in the newly available sources of information regarding our health status. While the push toward individualism may have motivated our search for ways to treat ourselves during the 19th and 20th centuries, this same push may have motivated us to become our own health status evaluators in the 21st Century. This can be considered an alternative perspective on healthcare, in that traditionally, healthcare clinicians issued orders for the generation of health-based information and carefully held all critical information

regarding health status. Now, much of this information is available to the patient, and "knowledge/information is power!"

For many years, we have been able to take our own blood pressure and test our sugar levels. We can do our own urine sampling. Take saliva tests to check for cortisol levels and toxicity. More recently, numerous technology-based trackers have emerged that enable us, as patients, to monitor our heart rate, heart rate variability, or track our sleep cycles, including the amount of REM, deep sleep, and total sleep duration.

As recent advertisements have touted, we can now buy inexpensive EKG monitoring equipment to help us view (and perhaps grow nervous about) records of our beating heart. An ongoing record of heart rate over 48 hours may provide valuable information about somatic reactions to specific events in our lives and potential patterns of physiological arousal during our daily circadian cycles.

Hybrid Preventative Measures and Treatment Plans: In keeping with the holistic perspective we embrace as proponents of Salus, we also adopt hybrid perspectives and practices. Many of the most effective alternative treatment plans involve more than one modality. Action accompanies injection; diets complement pills. For instance, a nutritional plan might involve not only the consumption of probiotics and anti-inflammatory foods, but also the use of nutritional supplements. Hormone replacement therapies may be best accompanied by increased exercise, a revised diet, and/or some psychotherapy.

Similarly, ozone therapies should be accompanied by rest, periods of reflection, and nutritional shifts. Nebulizer machines and nasal spray bottles offer an alternative to medications like albuterol, ozone, or methylene blue, which are more readily absorbed into the bloodstream. Nebulization enables the direct delivery of drugs to the lungs, thereby enhancing their effectiveness in treating respiratory issues, histamine responses,

and certain autoimmune inflammatory conditions that have been found to correlate with the use of nebulizers. For these direct delivery methods, it would be beneficial for this medication to be combined with other health-enhancing behaviors, such as a good night's sleep, a nutritious diet, and regular exercise.

Finally, there are hybrid plans that require self-agency along with companionship (in this case, other human beings). Most notable of these plans is the 12-step program used to address addictions of many sorts—ranging from alcoholism to gambling and sexual promiscuity. Other support systems that accompany self-agency are to be found among those who have suffered strokes, heart attacks, cancer, and other major diseases.

Along with their caregivers, these health-challenged men and women are likely to find that they find others in their support group to be sources of information about many well-documented traditional healthcare perspectives and practices. They are also likely to find sources of information about ample alternative healthcare perspectives and practices, such as we have just identified. They will often find that these alternatives are much more than "complementary." They frequently reside at the heart of a prevention, treatment, or recovery program—along with a "little help from our friends."

The Mind-Body-Spirit Connection: Plotting New Directions for Salus-Oriented Provision of Health

Salus-oriented health care provision grew directly out of several different psychologically-based human services – in particular, career counselling, leadership development, and organization development. It is not surprising, therefore, that Salus-oriented health care provision is aligned with and makes extensive use of many psychological principles and strategies. It is even more the case when we come to recognize that physical health as well as

mental health is deeply immersed in psychology. Especially the interweaving of emotions, cognition, and physiology.

Mind Meets Brain and Body

Revolutions in the field of neurobiology are now closely aligned with (and complement) a comparable revolution in the field of cognitive psychology – mind meets brain and body. We see this alliance in the brief description we offered earlier of the biopsychosocial perspective on health.

Notable mind-body therapies include yoga, mindfulness, Reiki, meditation, energy healing, massage, reflexology, Ayurveda, naturopathy, hypnotherapy, chelation therapy, and cupping. We also see this alliance operating in the close relationship between health-based Salus provision and the engagement of three other human service strategies: psychotherapy, biofeedback, and (the newest of the psychologically founded strategies) neurofeedback. We will briefly touch on each of these.

Treatment Modalities

Psychotherapy is the use of psychological methods, particularly when based on regular personal interaction, to help a person change behavior and overcome problems in desired ways. Psychotherapy aims to improve an individual's well-being and mental health, to resolve or mitigate troublesome behaviors, beliefs, compulsions, thoughts, or emotions, and to improve relationships and social skills.

We have found that many health-related issues (especially those involving trauma and sustained negative stress) are best addressed jointly by an experienced psychotherapist and a physician or other member of the healthcare team. Some of our best work is done when the physician helps their patient recognize their need to work with a psychotherapist, while also working with members of the healthcare team.

Biofeedback is a technique you can use to learn to control your body's functions, such as your heart rate. With biofeedback, you're connected to electrical sensors that help you receive information (feedback) about your body (bio). Biofeedback is an effective technique for training people to change the variability and dominant rhythms of their heart activity. Once again, an alliance between a Salus-oriented clinician and biofeedback technician is often of great value, especially in the reduction of negative stress.

Neurofeedback is a type of biofeedback that measures brain waves to produce a signal that can be used as feedback to teach self-regulation of brain function. Neurofeedback is direct training of brain function, by which the brain learns to function more efficiently. We observe the brain in action from moment to moment. We show that information back to the person. And we reward the brain for changing its own activity to more appropriate patterns.

A Salus-oriented clinician will find it of great value to become knowledgeable about this new technology and to partner with a technician (or psychotherapist) who is using neurofeedback in their work. There are several "over-the-counter" devices being marketed as neurofeedback devices that can be self-applied. We urge caution in the use of these devices by yourself or your client. Someone with training is needed – especially because these devices will often activate the HPA Axis in response to the re-emergence of traumatic memories.

In recent years, a substantial shifting of attention has occurred with regard to what is often called "the Mind Body Spirit Connection." This involves the crossing of significant boundaries between psychology, biology, and spirituality. It also involved a crossing of the Pacific Ocean. West is meeting East. Buddhism dances with Judaism.

Psychotherapy interweaves with the practices of Yoga. Stress reduction strategies are infused with the practices of meditation. The holistic health perspectives of Vedanta India complement the healthy lifestyle perspectives that drive the formulation of integrative medical practices in North America. At the heart of the new Salus-P3-oriented alliances there are four closely related practices. These are mindfulness, meditation, guided imagery, and visualization. Each of these practices can be demonstrated by a Salus-oriented clinician or can be a valuable tool used by a practitioner who is referred by this clinician.

Mindfulness is an incredibly powerful tool in the treatment of mental health disorders, stress-related conditions, cancer, as well as cardiovascular conditions. Mindfulness can play a vital role in the prevention of many mental health disorders through creating attention that is directed and focused on the present experience. The connection between our minds and our bodies is something we can instinctively feel. But how much attention do we pay to our bodily sensations from moment to moment? To truly understand our own emotional lives and those of the people around us, we need a level of awareness. This awareness is achieved through the practice of mindfulness and the development of body intelligence.

Bringing All Health-Based Strategies and Tools to Healing Engagements

In this first chapter, we have offered only a glimpse of the major strategies and tools that can be brought when working with clients. The Salus-oriented clinician can be of great value in helping their client recover from an illness or injury. Even more frequently (and even more importantly), the clinician can help their client prevent illness and injury by adopting a more health-oriented lifestyle. It is in the arena of prevention that a Salus clinician is likely to find greatest success – and greatest credibility.

It is so much more rewarding to remain healthy and vitally alive than to devote time, energy (and money) to recover from a disease that could be avoided or somehow survive in and adjust to a work setting, physical environment, or toxic culture. Healthy lifestyles and healthy communities are growth-enhancing at all levels (biologically, psychologically, socially, and spiritually). They can be achieved by any of us during the challenging 21st Century, with the assistance of a Salus-oriented clinician.

Four Tiers of Health Care

Salus-oriented health care perspectives, policies, and practices require not only a comprehensive biopsychosocial perspective on the ingredients of health, but also a comprehensive multi-level view on addressing health care challenges. Dr. Camara Phyllis Jones of the American Public Health Association offers a wonderful metaphor that sets the stage for this comprehensive model of healthcare (Jones, et al., 2009). She describes the situation where a cluster of people is standing on the edge of a cliff. Some of the people fall off the cliff; fortunately, there are ambulances waiting at the bottom of the cliff to pick up the hurt people and take them to a hospital for treatment. This is model one (treatment).

Alternatively, nets and trampolines are placed halfway down the cliff, which will catch the people as they fall off the cliff. This is model two (partial prevention). A third alternative is for a fence to be built at the top of the cliff, which prevents people from falling off the cliff. This third model (first-order prevention) leads to fewer casualties. Jones suggests that there is a fourth model: people can be encouraged to move away from the edge of the cliff. This second-order prevention strategy eliminates the need for a fence, net, or ambulance.

A comprehensive health psychology program (Salus-P3) would embrace all four models. It would provide treatment strategies, as well as strategies that reduce the impact of injury or illness. A

comprehensive program would also offer prevention strategies that discourage or block behaviors that lead to illness or injury. Finally, this program would lead to a shift in public attitudes that move people to health-oriented values, priorities, and perspectives regarding their own life and the lives of other people in their family, community, and society.

Tier One: Treatment

At Tier One, a clinician, in essence, helps an "injured" or "ill" person (who fell to the bottom of a cliff) with identifying and articulating the nature of the injury/illness, while either providing the treatment or identifying and contacting appropriate treatment professionals. A typical example of Tier One approaches to the matter of health can be found in the treatment of lung cancer produced at least in part from a lifelong addiction to cigarettes. This treatment might involve medication, radiation, and/or surgery.

Many Tier One healthcare professionals do not do the treatment themselves but provide valuable Tier One services. A primary care clinician, for instance, often does not provide direct treatment unless the illness or injury is minor. However, the primary care physician (and other health-related professionals) can provide valuable advice, information, and assistance to someone who is injured or in need of medical care for a lingering disease. The clinician can also offer assistance that reduces the impact of injury or illness (such as identifying appropriate and competent health care assistance—be it a home-care professional or rehabilitation facility).

Tier One referral and advocacy services are especially valuable if the client or patient is elderly, traumatized, or afraid of "medicine." Many different kinds of healthcare professionals can be of significant help to their patients/clients if they come from other cultures and are unfamiliar with health care practices in the "new" society. If one's patient/client is without family or social

support (living in isolation) the healthcare professional can fill in as a caring and assisting support service.

A colleague of ours, who works as a health-based coach, provides this type of service for several elderly clients who are without family or consistent community support. Our colleague has often made herself available to her clients when they have fallen, suffered a minor stroke, or gone to the hospital with a life-threatening fever (occurrences that are all too common among the elderly).

She provides "hands-on" assistance, helping her client check in at the physician's office or hospital. She also attends her client's meetings with the physician. One of her clients recently held her hand and told her (with considerable emotion) that he believes he would not be alive right now without her caring support. While many elderly men and women need full-time health care assistance, others only need to know that a Tier One clinician is available when needed.

Tier Two: Amelioration

In keeping with the Cliff metaphor, the Tier Two clinician encourages her patient/client (who has been "saved" by the net) to seek and maintain health care practices that are of value in their recovery and in their avoidance of further complications. Frequently, with Tier Two psychological services, the client or patient has had a "wake-up" call – having suffered a stroke, having been given a startling medical diagnosis regarding diabetes or a pre-cancerous condition, or having just recovered from a broken limb. "What do I do to avoid further injury or illness?"

A typical example of Tier Two approaches to the matter of health can be found in the prescription of a nicotine patch to address the lifelong addiction to cigarettes. Nicorette gum, patches, and inhalers also serve as an ameliorative approach to cigarette addiction. The patient/client is aware of the harm associated with

cigarette addiction and is seeking to reduce or hopefully eliminate this addiction.

The clinician can help her patient/client answer this question in three ways: (1) identify appropriate ways to pose this question to their health-care clinician, (2) suggest articles, books and reports that the client might read for their "self-help", and (3) ask client challenging and generative questions regarding their own health habits (what led them to fall from the cliff) and potential sources of personal as well as family and community sources of support for (and resistance to) their new health habits. This third mode of healthcare assistance (asking generative questions) is often of greatest value--and most often missing in a client's life. In recent years, assistance of this type has often been offered through the use of a generative strategy called *motivational interviewing* (Miller and Rollnick, 2002).

Tier Two healthcare services are especially valuable regarding medication compliance, identifying healthy habits (nutrition, exercise, sleep), and discovering potential household hazards. Healthcare professionals can often offer their clients tools and strategies for effective stress management. They can also help their clients assess environmental conditions that are conducive or detrimental to health (an assessment that sadly is becoming increasingly important in many communities throughout the world).

Bill Bergquist offers his own personal experiences regarding Tier Two services:

> I have worked very closely with a colleague for many years who has recently taken on the job of providing Tier Two psychological services. He recently recovered from a stroke and is involved in his own ongoing rehabilitation (while also changing many of his health habits). While spending time with other stroke survivors in a nearby health care facility, my colleague came to recognize that

there was a great need for (and strong interest in) health-based psychological services that focus on this recovery process. He began meeting with new clients who are recovering themselves from strokes. He helps them identify ways to sustain their new healthy habits, while also helping them build new relationships with family members (who are suddenly concerned about his client's disabilities and even his client's mortality).

As noted by Atul Gawande (2017), in his remarkable book, *Being Mortal*, this is certainly the right time for his clients to engage in critical conversations with significant others regarding the near and distant future.

Tier Three: Prevention

A healthcare professional can engage in prevention strategies that discourage or block behaviors leading to illness or injury. The Tier Three healthcare professional is helping her patient/client who is standing at the cliff's edge to avoid falling off. She helps her patient/client to identify and engage those healthy practices that reduce the chance of injury or illness.

As in the case of the provision of Tier Two services, the Tier Three clinician often engages in some tough questioning ("Why do you think you are hesitating to start up this new health-based practice?"), some monitoring ("your blood pressure is still quite high") and some encouragement (you have taken an important first step!)

A typical example of Tier Three approaches to the matter of health can be found in the promotion of campaigns against the use of cigarettes. Children are taught about the damage caused by smoking, and television ads dramatically illustrate the pain and suffering associated with lung cancer. The goal is to eliminate cigarette smoking and thereby reduce illness and health-related costs.

Tier Three services are especially valuable concerning lifestyle changes (nutrition, exercise, sleep). As in the case of Tier Two, the provider of healthcare services might help her patient/client with stress management and the continuing use of preventative medications, Environmental safety (inside home and workplace) can also be an important (and unique) source of monitoring (and questioning) by a healthcare professional – especially if her patient/client is elderly (and living in a home that has not be retrofitted for the unique safety needs of her client).

Bill Bergquist illustrates this Tier Three psychological strategy with an event that occurred in his own life:

> The health-based professional in this instance is a gifted and dedicated physician who found a way to spend quality time with her patients (many of whom were other physicians). She made extensive use of appreciative strategies (without ever having read anything about this approach to human interaction). She and I had focused during the previous year on my weight. I had not been successful in losing weight and was even considering the cancellation of my annual medical appointment with my physician, given this failed attempt to lose weight.

Bill reflects on her effective use of appreciation:

> My physician and I met and, sure enough, there was no loss of weight. I was waiting for the critical review by her (and by my own superego). Instead, my physician offered the following appreciative (and challenging) observation: "While you haven't lost any weight, you haven't gained any—so let's look at what you are doing right. What are you now doing to avoid gaining weight? Let's see if more of this will help you lose weight."
>
> I was caught! It was not a matter of simply giving up as someone who was not capable of managing their weight. I was still accountable and was not helpless. We reviewed

> the slight changes in my health habits. She suggested that I focus on two of these changes: (1) spending even more time walking my dog (for exercise) and (2) continuing to cut back on my consumption of specific foods that were not necessarily my favorite. While these foods were not my favorites, I had grown up consuming them. I was confronted with altering habitual behavior.

Bill began to take his physician's advice, having not been able to escape from a state of helplessness.

> Even my habitual behavior was alterable—especially because I didn't necessarily like the food I was eating. In the old days, these foods were supposedly "good for me"—probably because they were not my favorites. It was like taking a medicine that tasted horrible but was "good for me to take."

Like many of us, the unhealthy behaviors in which we engage are often based on ill-conceived attempts by our parents to "make" us healthy. There were many variants on the old "cod liver oil" phenomenon: it is good for you if it tastes bad or hurts. [Actually, cod liver oil has been found to be quite beneficial!]

Tier Four: Empowerment

Finally, a knowledgeable healthcare professional can advocate and lead a shift in public attitudes. They can move people to health-oriented values, priorities, and perspectives regarding their own life and the lives of other people in their family, community, and society. The Tier Four professional, in essence, is asking the fundamental question: "Why are you (we) all living on the edge of the cliff?" The option is to move away from the cliff. The healthcare professional is helping her patient/client or a patient/client system in effective advocacy regarding the creation of healthy communities (moving away from the cliff).

A typical example of Tier Four approaches to the matter of health can be found in the formulation and advocacy of public policy that either increases taxes placed on the sale of cigarettes or raises the age requirement regarding the purchase of cigarettes.

The Tier Four focus might instead be directed toward the companies that produce cigarettes. How does one apply a carrot or stick by either providing incentives (carrots) for these companies to move into other product lines or making the continuing production of cigarettes prohibitive in terms of costs and/or legal restrictions (sticks)?

Everett Rogers' (2003) model of innovation diffusion can be a valuable guide in the promotion of ideas and practices related to healthy habits and environments, as well as health-related public policies. We focus on his model at several points in this book. A Tier Four healthcare professional can find ways to support those involved in the early implementation of healthy community policies and practices (Rogers' early adopters).

A Tier Four professional can also assist her client in the gathering and presentation of persuasive information regarding the effectiveness of healthy community policies and practices (Rogers' early majority). Finally, the Tier Four healthcare professional can help her client or client system in devising ways (e.g. social media) of persuasively informing the general public about specific healthy community policies and practices that are now commonly in place and are the "norm" (Roger's late majority).

Conclusions

You will notice that the Tier Four professional usually ceases to be a neutral party. She is committed to health and to the initiation of health-oriented public policies. Furthermore, her clients are often not individuals or even families or community groups. The

client is often an entire healthcare system, public agency, or government office.

Tier Four healthcare is "big picture." It is often identified as population health. This broader perspective is not for the faint of heart— but it is essential. We propose that a comprehensive Salus perspective on health care is also "big picture." Salus is similarly not for the faint of heart, nor for the faint of head or soul.

Chapter One

Salus Perspectives, Policies and Practices

[Note: This chapter and all of the following chapters conclude with excerpts from the chapter conveying some of its most important or interesting points.]

There are certain types of stress that are not only not associated with trauma but are actually quite beneficial to the sustained health of a patient or client. Trauma is often a sudden event that dramatically explodes into our lives and changes the way we perceive the world.

Of greatest importance for the Salus-oriented provider is the role played by positive stressors as motivators for change and guides for movement towards a more harmonic state of wellness.

A stress response is the body's activation of physiological systems to provide a sense of safety and protection.

We become stressed about being stressed. It is a vicious circle – a "double whammy."

What used to be a source of mild stress now becomes highly stressful –even traumatizing. Our mental categorization of trauma and stress becomes part of our daily life. Thus, we end up in a "stress rut" We become more easily stressed and thus traumatized by once-minor intrusions. The world becomes

increasingly unsafe for us—in fact as well as in our state of anticipation. Everything challenging us is heightened.

Our body is prepared for the repetition of events from earlier in our life and makes adjustments (involving such diverse functions of our body as our hormonal system, reproductive system, and sleep cycles). This means that our body operates as an integrated system that demands "all hands on board" when a real, anticipated, or imagined trauma occurs.

The problem arises when we are always imagining that lions are chasing us – in other words, when we are always under stress in a world and life filled with lions. Everything is traumatizing or at least potentially traumatizing.

Our brain as well as our body can be impacted: neuroinflammation is inflammation of nervous tissue. It may be initiated in response to a variety of cues, including infection, traumatic brain injury, toxic metabolites, or autoimmunity.

There is evidence that oxytocin, a neurochemical resulting from positive social and sexual experiences, suppresses the HPA axis—thereby counteracting the stress response and promoting the more positive health aspects of human nature.

The Gut contains 100 million neurons (more than found in the spinal cord). It seems that our Gut is a highly complex biological system—it is not simply our full or empty "tummy".

The role played by genetics can never be separated from the role played by both the environment in which the neonate lives in their mother's womb and the environmental factors that influence development after birth. The nature/nurture debate is no longer viable. A highly interactive model of human life (and human health) is now dominant in our understanding of and appreciation for the complex interplay between genetics, the womb, and life experiences.

We tend to choose the option that is selected by most other weak and slow animals (such as small rodents): we freeze in place and hope that the lion will not recognize that we are nearby. Unfortunately, we haven't learned much from the rodents about what we do after we have been frozen in place for several minutes (with the lion moving on after ignoring us or neglecting to see us).

A list of more than 70 pathways includes strategies related to lifestyle sleep enhancements (e.g. exercise, diet, length of sleep) and sleep preparation (e.g. reading, relaxation, and taking a hot shower). The list includes ways to create a sleep-enhancing room environment (e.g. bedroom temperature, darkness) and the environment of the bed in which we are sleeping (e.g. size of bed, type of pillow, type of sheet). This list is completed with the identification of many sleep aids (ranging from CPAP and other sleep-inducing machines to the use of essential oils, melatonin, and over-the-counter sleep aids).

There are toxins that we are labeling: "cultural toxins." These are the unhealthy interpersonal conditions that exist in our workplace and community. There are also "political toxins."

A comprehensive health psychology program would embrace all four models. It would provide treatment strategies, as well as strategies that reduce the impact of injury or illness. It would offer prevention strategies that discourage or block behaviors that lead to illness or injury. Finally, this program would lead to a shift in public attitudes that move people to health-oriented values, priorities, and perspectives regarding their own life and the life of other people in their family, community, and society.

The option is to move away from the cliff. The healthcare professional is helping her patient/client or a patient/client system in effective advocacy regarding the creation of healthy communities (moving away from the cliff).

Section One

A Biological Appeal to Good Health

Chapter Two

Accommodation and Assimilation: Allostasis and the Gut

Caroline

In my early thirties, I entered a relationship with an African American man, a lawyer and judge. I thought my father, who himself had been a judge, would be proud. Instead, he abruptly asked me to leave his home, exposing his deep prejudice. His prejudice cut through me like a blade. He told me to leave his house immediately. I went in disbelief, but also with the sharp knowledge that I would never win his approval.

At thirty-six, I entered graduate school to pursue a career in counseling, driven by my own healing journey and my desire to understand the human spirit. My father dismissed my choice outright, calling counseling a low-income profession unworthy of pursuit. His disapproval was relentless; he had judged me for marrying too young, for becoming a single mother, and for my struggles. His rejection became permanent. We never spoke again.

Throughout my adult life, no intimate relationship had lasted more than six years, until I graduated with my master's degree at age thirty-eight, when I met the love of my life. We married two years later, and though I suspected his infidelity at times, he remained by my side. Still, my body was never entirely at peace. I was plagued by chronic constipation, frequent illness, anxiety, depression, and chronic pain despite my dedication to holistic health, exercise, and restricted dieting.

Six months into our marriage, I was working for County mental health services when my car rolled over in an accident that left me with a traumatic brain injury. This was the second experience of near-death. Given all the evidence from the vehicle, I should not have survived. For the first time in decades, I surrendered myself fully to medical care. Doctors prescribed psychotropic medications, and I was labeled

"histrionic," my many physiological complaints written off as psychiatric. This was a familiar dismissal, but now it came at a time when my life was unbearably heavy: I was enrolled in doctoral studies, caring for my dying mother, and uncovering evidence of my husband's infidelity.

Dr. Bloor

Surprisingly, I kept seeing Caroline. For some reason, she found my medical assistance to be helpful. We sorted through her many concerns, although I think we were mutually dissatisfied with how our relationship was going. Despite that, she kept seeing me and we had a joint agreement on how many topics and how much time we could take on each topic at each visit. We also began to talk periodically by phone so she wouldn't have to come in so often.

She was lost to follow-up a couple years later but drifted back into my clinic after my practice was acquired by a large local health system and medical group. I was now an employed physician, so I was worried because I'd lost the ability to adjust visit lengths to adapt to patients like Caroline who needed more time to sort through complex health challenges. It was about 2005 when she appeared in my practice. She was shifting her career toward becoming a therapist and had begun to recognize her own psychological challenges and started off the discussion with her breakaway from her father who was dismissive about her career shift.

When she tried to relay her level of disappointment and betrayal of her father with a local psychiatrist, he had told her she was "histrionic" and began treating her with a series of antidepressants and antipsychotics, adding depression, anxiety to her long list of health conditions. Her bowels had shifted from diarrhea toward bothersome constipation. Her chronic pain was no better than 5 years earlier when I'd last seen her. I was sort of resigned to giving her Vicodin although I knew it wasn't ever going to improve her pain enough for her to get off of the medication.

I once again warned her that "rebound from Vicodin can cause pain" to try to help her see that chronic Vicodin wasn't a solution, it was a band aid for her pain. But pain was so central to her distress that I felt

compelled to keep treating her for chronic pain, although I was beginning to learn about alternative pain treatments like TENS units, acupuncture, certain anti-depressants with pain-reduction side-effects, and Neurontin, which was less habit-forming than Vicodin. However, such a discussion would take up an entire visit, so I kept that information to myself at her first return visit and determined that I would begin to talk through alternative options with her once her pain was stabilized.

Caroline's mentioning all the psychiatric conditions troubled me. I'm not a psychiatrist. I'm not a therapist. So, I made a referral to another psychiatrist (she refused to see the one who labelled her "histrionic" and gave her all those meds). I made a small note to the Psychiatrist listing all the meds she'd tried and why she didn't want those anymore. Was there anything else he might suggest? I also made a referral to a local therapist I'd found who had helped several of my patients with chronic pain, depression, and anxiety.

All living organizations must adapt to a changing environment while also protecting and preserving their current way of being in the world. At the heart of this adaptation and preservation process is the act of ongoing learning. As Jean Piaget (2001) noted many years ago, the adaptive function requires accommodation and assimilation. The "learner" must adjust their current frame of reference and subsequent way of engaging their world based on new information coming in. They must *Accommodate*. At the same time, the learner must preserve their current frame of reference. They integrate the new information with their existing frame. The learner must *Assimilate* the new by ensuring that it fits with what is already "known."

On the one hand, if the new information or experience is not aligned with any existing framework or set of experiences, then this new information or experience is likely to be ignored or radically distorted to fit with the existing frame. On the other hand, if there is no adjustment to the new information coming in, then an organism is doomed to a very-short live of ignorance, mal-

adaptation, and often an early death. Whether we are unicell amoebas or multi-celled *homo sapiens*, we need both sides of the learning coin: accommodation and assimilation.

These two complementary processes are required not only when we must learn but also when our body must function in a healthy manner. We must be biologically adaptive (accommodation) while also being biologically stable (assimilation). In this chapter, we address the primary accommodating function of the human body. This function is Allostasis. We also address the primary assimilative function of the human body. This function is served in the Gut, where incoming entities (food) are assimilated and transformed into life-giving energy. We believe that Dr. Bloor would have benefited from knowledge of Allostasis when working with Caroline and might have been more effective in treating Caroline if he had a greater appreciation of the Gut.

The accommodating and assimilating processes of the human body have been acknowledged for a long time (probably longer than the acknowledgment of Piaget's model of learning). However, the Allostatic perspective and major new insights regarding the Gut have dramatically altered the way in which we view the processes of accommodation and assimilation. We can construct a Salus-oriented perspective regarding human biology by gaining insights into the processes of Allostasis and the many functions served by our Gut. We first look at the process of Allostasis.

Allostasis and Human Accommodation

Peter Sterling, one of our guest presenters at the monthly Salus Health Care Forum, began his presentation by reflecting on his early years in Medical School. I worked in a medical school for 40 years and every course began with the statement that homeostasis is the basis for all medicine. It is still the basic concept and leaves us leaning toward the assumption that the human body is primarily in the business of moving everything back to some

stable state. This is much more an assimilative than an accommodative perspective.

Peter Sterling briefly indicates during the Forum how incorrect this is. He quotes from Claude Bernard in 1854 (just before *Origin of Species* was published):

> The fixity of the (internal) milieu supposes that external variations are at each instant compensated .... All the vital mechanisms have one goal, to maintain the uniformity of the conditions in the internal environment."

Walter Cannon (chair of physiology, Harvard, 1906-1942) elaborated this hypothesis and named it "homeostasis". Cannon's final 1941 summary included these points: (1) constancy is key; achieved by detecting errors and correcting (like a thermostat), (2) mechanisms are largely of the body; neural controls for emergencies ("fight or flight"), (3) safety factors are large; for example, plenty of extra blood, and (4) automatic mechanisms of the body free the brain for "higher" functions: "for work and play, for adventures, for research and exploration, for the production and enjoyment of literature, and for all manner of social interests." However, as Peter Sterling notes, all of these points are incorrect. Start with the primary goal of the organism: it's not constancy but efficiency. Peter turned to a book he wrote about five years ago (Sterling, 2020).

The Brain is Efficient

The brain is smarter than a supercomputer but uses ~100,000-fold less energy and space. Our brain uses 20 watts and only occupies 1.5 liters of space. This is fostered by 10 principles of efficient design. Our bodies use 80% of total energy, so they must be efficient.

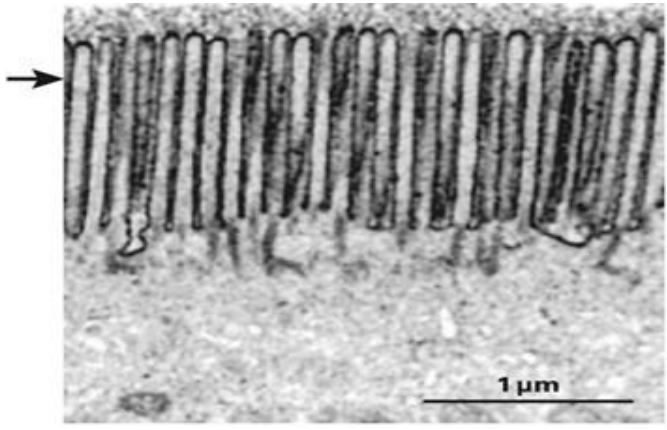
We can consider what we get for free: Basically, we get energy from Brownian motion (thermal noise). Many of the best things in life are free when it comes to our brain: (1) protein molecules in

cytoplasm are battered by the kinetic energy of water molecules, (2) each protein molecule receives 107 KBT/ms., (3) protein is moved stochastically between its various conformations (mostly inactive). However, sooner or later, they become active (actually very soon). We need to stabilize the one active form that needs just a tiny bit more energy: ~20 KBT over 1ms.

So, where does this come from? Less would be insufficient; more would be wasteful. This energy comes from ATP (universal energy packet that drives most cellular reactions) and delivers 20 KBT (optimal). So, to drive intracellular chemistry, the enzyme ATP synthase makes 45kg/day! It is just cranking it out! This is not a simple enzyme, but rather a nano-turbine that grabs ADP + PO4-3, forcing them together to produce 1 ATP with every 1/3 turn. Each turbine in the mitochondrial membrane rotates at 9,000 rpm!

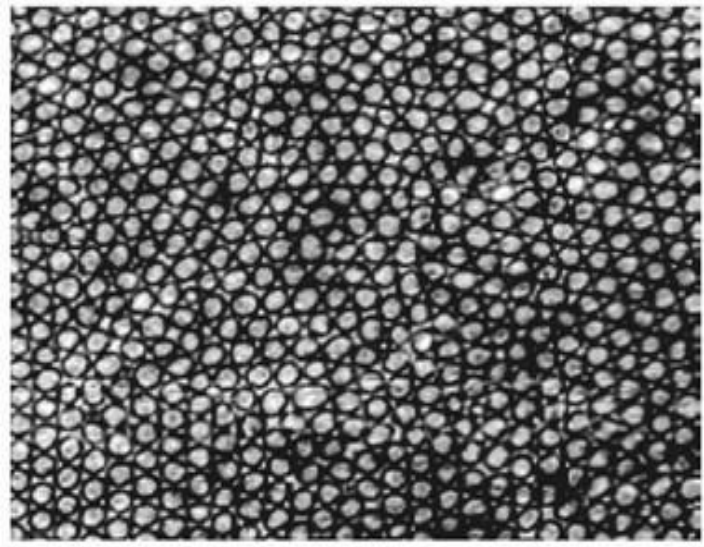
So, the question is: How efficient? i.e., how much energy is used to drive the turbine is converted into ATP? The answer is: 90%. This means that we have an optimally sized energy packet that is optimally produced. How efficiently does the whole animal capture nutrients from food? The Gut optimizes nutrient absorption across scales: nanometers to meters.

Here is a picture of the Intestinal microvilli (90nm diam).



The surface area of the Microvillar is increased and they are packed optimally for protein transporters. They are as small as can be and are packed tightly together. They are completely covered on the surface with protean transporters that pump in glucose and all of the nutrients from the Gut that go into the bloodstream.

This shows a cross-section:



There are microvilli that are essentially pleats in the Gut that further increase the area of the microvilli. They are presented here on a mm scale. The total surface area in now on the order of ~100 fold that of a smooth tube.

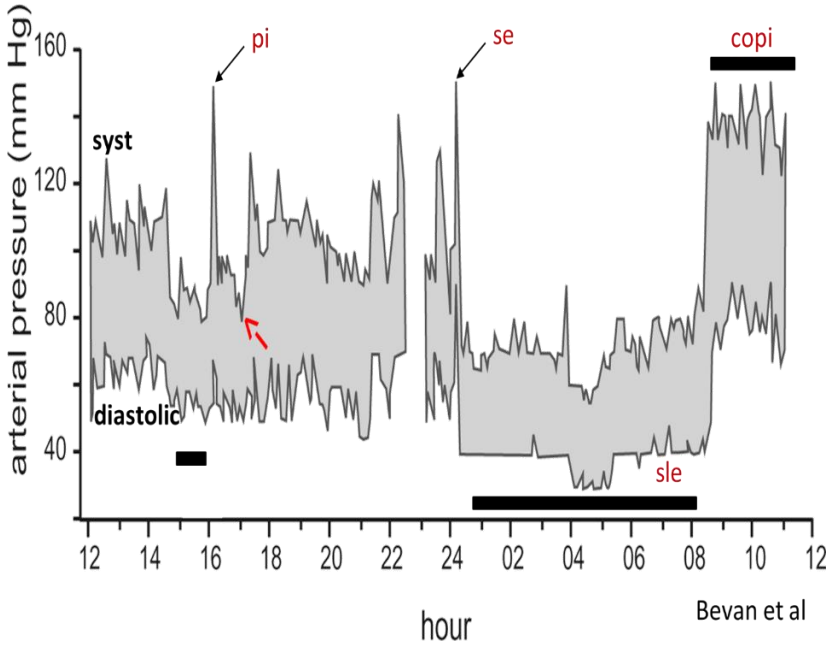
This means that every nutrient molecule that is saved in passage reduces additional risky foraging. Every molecule that is lost in passage requires the animal to go out into the world to do more foraging. This is a tremendously efficient mechanism. The regulatory schemes must also be constrained to optimize energy use.

Since all of these basic processes must approach optimality (involving physics and chemistry for packing in space). we should think twice about tweaking them with drugs. They are really in good shape. Tweaking them is often going to mess things up.

Parameters of the Body

The next point about homeostasis that is wrong concerns the parameters of the body. They are not constant. They vary continuously. Variations are made not to correct errors; they are made in response to predicted needs. The idea is to provide just enough of whatever parameter you are regulating. And just in time. This is the way to run an assembly line. This is Toyota's slogan: just enough. Just in time.

Here is a graph from *What is Health* (Sterling, 2020) representing arterial pressure (systolic and diastolic) over a twenty-four-hour period for one individual.



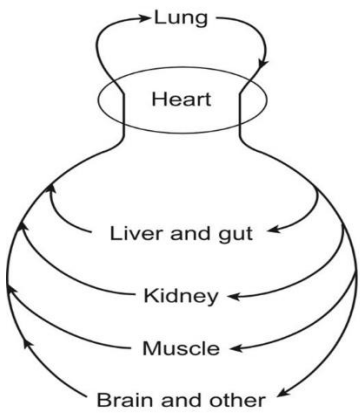
What it shows is many peaks and valleys of blood pressure. So, when they ask: " What is your blood pressure?" It varies all over the place according to what's going on in your mind. So, for example, at one point it is 3 in the afternoon. The individual is dozing during a class lecture. The blood pressure comes down. At this point, a neighbor sticks him with a pin. His brain predicts danger, and the pressure shoots up rapidly.

He looks around and realizes that this is a prank, and his blood pressure comes down. At midnight, he becomes sexually aroused. His brain predicts the need for a higher level of blood pressure. And afterwards, the brain predicts that lower pressure is needed. This allows for sleep. And the next day, he is coping with challenging conditions. The blood pressure is back up to a pretty high level.

The point is that if he were to hold his pressure constant, he would be in trouble. That is part of the problem with giving beta blockers. They leave people with difficulty in varying their blood pressure.

Safety Factors, Efficiency, and Adaptation

The other problem about homeostasis concerns the fact that the Safety factors are small to minimize excess capacity. You want things to be efficient. You don't want to have an excess of blood. You want to minimize what you have. This is achieved by trade-offs that are regulated by our brain. So, Exercise requires an 18-fold increase in blood to muscle. The heart-lung output can increase only 3.25-fold. The brain predicts that the liver, Gut, and kidney can afford less flow. They can wait a while. The brain shunts the blood from these organs to the muscle. So, the brain makes these tradeoffs by making a temporary "loan" to the muscles. This allows a much smaller cardiovascular plant than would otherwise be possible.



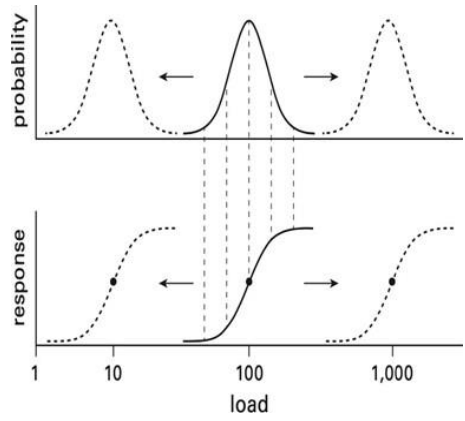
Blood flow (liters per minute)

	Rest	Exercise	Change
Lung, heart	6.0	25.0	+ 325%
Liver, gut	1.5	0.3	− 80%
Kidney	1.1	0.3	− 80%
Muscle	1.2	22.0	+ 1800%
Brain, other	2.2	2.5	+ 10%

Principles of Neural Design 2015

There is a key principle that is totally absent from the idea of "homeostasis." This principle concerns adaptation. It is a principle that operates throughout our body. Specifically, Adaptation is a process that sets the steepest response gain for the most likely need/load.

For instance, in this graph, the most likely load is 100. So, you want the strongest response to be set at this mid-point (response curve) so that it can give the steepest gain to respond to this predicted load.



Of course, the predicted load may shift to the right (1000). What you want to do is to have the response curve shift to the right to

maintain this predicted load point. So, when prediction shifts (dotted line), then the response curve follows.

This applies to all systems in the body at all scales. Continual exercise predicts that you are going to gain more weight. You are going to have a larger load. So, you strengthen your muscles. The appearance of dawn predicts brighter light. This leads the brain to reduce photoreceptor sensitivity. Overeating (a big problem today) predicts more glucose, so the pancreas should secrete more insulin. And this predicts more insulin over time.

So, the body reduces insulin receptors. This is termed "insulin resistance"; however, this is a mistake to call it "resistance." It sounds like war. But it really is just a form of adaptation that is universal in the body and the brain. Many of these things should be treated not by more insulin (or some other substance), but by changing the predictions!

Homeostasis denies the brain's primacy in physiological regulation. It denies that somatic pathophysiology is largely a response to chronic stress. It labels every somatic problem as a "disease" or "disorder". There is a real need in most cases to change the predictions.

Adaptation, Self-Fulfilling Prophecies, and Predictive Regulation

If physiological adjustments are made based on predictions, then what about the dynamics that psychologists call the self-fulfilling prophecy? At times, we act in a way that fulfills our predictions regarding what will occur if we act in a certain way. These dynamics often leave us foregoing accommodation and settling into a comfortable but ultimately maladaptive assimilation. In what ways does our body engage in self-fulfilling predictions?

Let us offer an example regarding how self-fulfilling predictions might operate in the human body. When our brain senses a sweet drink, whether it is a diet drink with no sugar in it, or a drink

containing sugar, our brain signals to our pancreas that it should create insulin. So, our brain is not responding to actual glucose entering our blood stream; rather adjustments are made in a predictive fashion.

This goes contrary to a caloric-based way of thinking which would calculate that there are no calories in a diet drink so this drink should have no influence whatsoever on the functions of the pancreas. This would suggest that the prediction of no weight gain for a diet drink is misdirected. Our body is working perfectly. This is a natural adaptation (based on the predicted impact of a sweet tasting drink) to an unnatural event (diet soda). Actually, the prediction function of digestive secretion was discovered by Pavlov many years ago. He received the Nobel Prize for this research in 1904. So, we have known about this connection for 120 years.

Given this predictive power, could the primary role of the physician might be one of education rather than that of someone prescribing drugs? Peter responds to this inquiry:

> We need to teach our patients that our body is operating at an optimal level. However, we are constantly throwing a wrench into the machinery of our body. You cannot eat the way people are eating. You can't sit still the way people are sitting still and expect our body to operate in a healthy manner. Yes, we must attend to our health if we want to avoid maladies – and attend to our mind and spirit as well.

Perry Pugno builds on what Peter has said:

> Peter, you seem to be saying that homeostasis is like medical treatment. We see a problem, and we do something to try to fix and modify. Allostasis is more like preventative medicine. We predict what might go wrong if we do bad things, So, we try to live in a way where we

do fewer bad things. We stress our physiology less. Our body does fewer adaptive things that ultimately hurt us.

Peter traced the history of his "allostasis" term and provides a further description of how it operates:

> I made up the word "allostasis" because I wanted to draw attention to the fact that "homeostasis" should be a dead concept. Some people think of allostasis as avoiding stress. OK. But "Allostasis" is actually a more accurate description about how the body functions. Processes go up and they go down. And they need to have some average level to remain healthy. So, allostasis is basically the idea of predictive regulation.
>
> The brain and body predict what is going to happen and initiate biological mechanisms and behaviors to correct for the predicted condition. For example, when you feel chilly, you put on a sweater to save heat. In most cases, the body is not maladapting. It is adapting the best it can. So, if you throw a wrench into the works, then you are going to have trouble. You can't say the motor of a car is maladaptive when you throw a wrench into the works. You can't put diesel fuel into a regular car engine. It wasn't designed to run on diesel fuel. It is the evolution of human design. We have to understand how we are designed. And go along with this understanding.

Mark Vukalcic returns to the notion of physicians as educators:

> In this day and age of misinformation, the role of the physician as educator is critical. To turn to a simple topic. We know that oils (like olive oil) turn to liquid at room temperature. We know that trans-fats are bad. We've known this for many years. However, the FDA only banned trans fats several years ago. They were very slow in responding.

> You can flip a cis-fat to a trans-fat simply by heating it. Just regular cooking. Just sautéing. I can find no evidence to tell me if I can cook olive oil at a certain temperature. At what temperature does a healthy trans-fat become an unhealthy fat? I can't find any information in this regard. Is it safe to cook with olive oil? Do you have to put it at low or low-medium heat before it switches to trans-fat? Before healthy fat is transformed into unhealthy fat? Information such as this is really required if we are going to give the mitochondrial engines the information about oils.

Walt Mills notes that the Council for Medical Education has recently required some knowledge of allostasis. He asks Peter how this requirement relates to medical education and beyond.

Peter indicates that this is a dream come true:

> I am now writing a biography, and in it, I write about the laboratory where I was conducting fine brain research for 40 years. And I had this shadow job on the side where I was documenting the dynamics of allostasis. It was very much against the grain. Basically, I experienced considerable resistance and pushback at every turn. So, I am pleased that it is finally making its way into mainstream medicine. I think. There is a famous scientist, Max Born, who declared that science advances one funeral at a time.

As we shall witness throughout this book, accommodation is always accompanied by resistance and a search for reassuring assimilation. Yet accommodation must be embraced. Significant new learning inevitably involves a struggle between our head and heart. There must be funerals where old ideas and assumptions are put to rest and replaced by new ideas and new frames of reference. However, there is still the need for bodily functions that transform incoming entities and that enable us to assimilate that

which will provide us with nutritious and life-giving energy. Much of this critical assimilative function resides in the remarkable complex human Gut.

Love, Safety, and Flow

Before leaving the worlds of accommodation and assimilation, we wish to dwell for a moment on the point of intersection between these two essential processes. In an environment of love and safety, the new is readily and joyfully joined with the old. New challenges are balanced with old forms of support. There are thresholds where neither accommodation nor assimilation appear to be relevant. We find ourselves on a threshold where the old and new seem to join in viewing the future. This all begins with an Allostatic prediction of safety and with a "gut feeling" that we can effectively manage something new.

Fight, Flight, Freeze, and Predication

Scott introduces a perspective on neurobiological functioning that is prediction-based:

> I begin thinking of neural modulators. The chemical changes that a person is having are based not just on ATP. If you are expecting fight or flight, then your digestive system is going to do things totally differently as well. Peter, when you are talking about prediction there is an environmental stressor component. The world that people are living in is just as impactful as their nutrition.

Peter agrees:

> Absolutely, that is what it is really about. You have to have some expectation of a decent life. While preparing my memoir, I began thinking back about my own childhood. I asked my mother why she raised me as she did. She mentioned that it was because of Dr. Spock. So, I went to the library and brought back an old edition of

> Dr. Spoke's book. This was the original 1945 edition of his book to see what he recommended about childcare. It is very interesting. I wish she had followed his advice. He indicated that the infant up to age 12 months needs a lot of love and attention. A lot of touching.
>
> To form a secure base. John Bowlby came up with the idea of forming a secure attachment. And that is fundamental to the rest of your life. If you don't get this attention during your first year, then you are going to have a lot of psychological trouble during the next few years. Spock says don't hassle the kid, don't bother them, don't shame them. You don't need to hit them. If you want to correct them, then do it in a friendly manner. If you can resurrect those behaviors in a family and help people achieve them, then you are contributing to their health.

Peter expands his analysis:

> There is one other thing. This book is written for the mother. Yes, fathers can benefit from the advice, but this book is directed specifically to the mothers who do not have their own mothers and grandmothers or their own aunts and uncles, to help them. This is the beginning of real social isolation. Of the family. And the family has not evolved to raise children in the single, isolated family system. That is one thing that my own anthropological studies have taught me. You need a lot of people to do the raising of children. So, now, for a mother to do it all alone is nearly impossible.

Apparently, we need predictions of love and safety. There are adjustments made in our body when we have this prediction of love and safety. We activate our parasympathetic system. Our Gut is prepared to receive that which is nourishing and life-giving. Whereas, if there is a prediction of punishment, there is a

quite different set of adjustments of our body. Our Gut moves into a protective mode. The usual parasympathetic state in which our Gut is prepared to operate is not available. We are in a sympathetic state, preparing for flight or battle. Our Gut must step aside so that energy can be devoted to potential physical activity.

Bill Bergquist expands on the fight/flight model and shares his own experiences:

> So much in psychology is now about freeze. The most common thing for human beings living on the African Savanah is to freeze, because we weren't strong enough to fight or fast enough to flee from a menacing animal (such as a lion). I had an opportunity to visit a Game Preserve while working in South Africa. Those working at the preserve said that human beings are one of the slowest things out there.
>
> So, much like little marmots and other rodents, we mostly learn how to freeze. We hope that if we sit there very quietly, then maybe the lion will just pass us by and not be interested in us. It becomes powerful if the prediction is that I am powerless—then I will instruct my body to freeze. This adjustment, in turn, produces a whole host of physiological responses.

Yet, as Craig McEwen has noted:

> Adversity is not trauma—cumulative and continued adversity can lead to toxic or chronic stress. And it is very different to predict differential population rates and individual health outcomes.

As we mentioned in Chapter One, the presence of trauma would be found in the successful attack of a real lion ("hard" trauma) or the near call of a lion in their attempted attack ("soft" trauma). Stress would be found in the actual or anticipated presence of

lions in the vicinity. As McEwen has proposed, it is much more likely that lions of many sorts will be present in certain neighborhoods. In these neighborhoods and among the people (population) living in these neighborhoods, the stress will be greater. Individual health outcomes are less positive.

Jeremy offers his own example:

> There is this concept called adverse childhood events. This touches on what Peter has been discussing. There is the prediction that if every American were to take this test honestly (and in a supportive environment so that they are not re-traumatized), then in their assessment of their own experience of trauma as a child, these Americans could accurately predict their own health outcomes. It is quite stunning how well it predicts such outcomes as suicide rates, heart disease, diabetes, and all of the things that we physicians are addressing. These outcomes can be known very early in life, yet this test is probing into family dynamics, which is sort of a taboo topic.

Craig McEwen chimes in again at this point. He notes that Adverse Childhood Events are predictive of later health outcomes only at a collective level. Rates of disease are higher the more we find adverse events in the child's history (ACE scores).

Jeremy broadens his observation to include an emerging healthcare challenge:

> We take kids out of the health care system at age six and don't bring them back in until they get a meningococcal shot prior to going to college. So, there are lost opportunities where important questions get asked in a doctor's office. So, if the doctor doesn't do the screening test, then this assessment is never done. Yet, Artificial Intelligence [AI] would have the capacity with home kits to help with this assessment. Biomarkers could be used. This is a rising phenomenon.

Craig McEwen shares his concerns. "Sounds to me like a bad idea – except for biomarkers, which might tell if there is toxic stress/allostatic load." (Anda, Porter and Brown, 2020).

Jeremy offers an additional suggestion:

> Epigenetic information could be accessed. People can access an enormous amount of information about their body without their physicians' prior consent. However, health plans won't pay for it. I am curious about the availability of AI, biomarkers, and substantial amounts of other healthcare information. People could find out a whole lot about their health risks and predict health outcomes. How do we get that to happen? Biomarker kits can now be purchased for about $200. And AI can provide the information needed for interpreting these test results.

We turn to the matter of biomarkers later in this book and offer an extensive list of eligible biomarkers. As Craig McEwen has noted, scientists have been working to find those biomarkers for allostatic load. It would seem that biomarkers are important tools for prediction and analysis of health.

Yet there are also some concerns about their use. Scott offers his own insights into this information as it would pertain to his own son:

> These tests come with varying efficacy. My son is 8 years old. I don't think I want him in homeostasis. I think I want him in effort. He is at his best when leaning forward and falling down sometimes. He is in a state of homeostasis when sitting on the couch. I like to think of my son as a moving body of water. I need to build a hose that helps to drive this body of water forward. And if I don't do that, he becomes a puddle. Peter, as you were talking about homeostasis and allostasis, I kept going back to allostasis as a hose and homeostasis as a puddle.

Peter responds to Scott's comments about desired outcomes for his son:

> Based in part on what Dr. Spock suggested, I would suggest that children don't have to be pushed. They need to be left alone. And given opportunities. Peter Gray has written a lot on childhood play. He thinks that one of the problems with anxiety that is increasing with children is that they don't have the opportunity to participate in free, unsupervised play. My grandson, who is 9 years old, has to go to basketball practice. Then he participates in games with coaches and referees. But the idea of going outside and choosing upsides and playing on their own, making their own rules. This isn't happening.

Scott agrees:

> You are absolutely right. I talk to other parents in my community. They indicate that kids don't just go out and play. You have to kick them out of the house and tell them to figure it out. Just go out and play.

Recent concerns have been voiced in many communities regarding the over-regulation of childhood play. And even the commercialization of childhood activities through the establishment of private sports leagues that require steep admission fees.

Biomarkers and Environmental Conditions

Peter brings the Salus conversation back to the use of biomarkers as they relate to the conditions of support, adversity and isolation:

> One important thing regarding biomarkers concerns the questions we ask in establishing a biomarker score. I think it is more important to ask people: what is happening to you? How is your life going? Many of us will have one or more adverse life events. The problem is you can't undo them. You have them and you need to acknowledge

> that they have happened and can then get help. When I give a talk, I go out of my way to share that I have had times in my life when I have needed help. I have had several times in my life when I have needed psychotherapy.
>
> People used to have a village where they could get support. We are very isolated now. We need to find support. I make it my business now to have some friends that I can walk with. We always talk and stuff comes out. I think that we can't just live in these isolated ways. When people are seeking help, they are not asked what is happening to you. They want to discover what is happening to them.

As Peter notes, people seeking help are often put off. Instead of being listened to, they are encouraged to take some pills. We all have our favorite "cure-all" that we are willing to recommend in an instance. With biomarkers, we are risking the formulation of an equation that relates every biomarker adversity to a specific pill.

Peter comments:

> I can take a lot of pills, but they are not going to address the fact that my mother wasn't able to give me what I needed at certain points. She made a mistake.

Thus, it seems that the prediction of outcomes based on biomarkers related to adversity must be made with great caution, for human beings apparently hold the capacity to overcome these adversities without taking pills, especially if they reside in a community of love and support.

Adaptive Motivation

Going beyond just the general observation that love and support can support adaptation to adversity, while isolation can exacerbate the effects of adversity, we can consider some of the

biochemical factors involved in motivating adaptive, accommodating behavior. Jeremy focuses specifically on the role played by dopamine in the establishment of allostatic processes and the motivating of adaptation:

> To draw back to your book, Peter, one of the other physiological dynamics you bring up is the natural, very brief, strong pulsive power of dopamine. This is a natural reward system that, when turned into social media "likes", happens over and over again. Big bursts of dopamine occur that are not physiological. They don't lead to the same outcomes as in a natural environment.
>
> Our bodies are trying to adapt to this over-stimulation by downregulating our dopamine receptors. It takes more and more intensity, which leads to the addictive cycle found in drugs, media effects, whatever. By not thinking about how our body naturally responds to stimuli, we are just searching for massive dopamine hits. We think that these big hits are the solution to unhappiness. This is leading to the depth of despair.

Clearly, dopamine plays a major role in the adaptive process and the operation of the allostatic process in human beings. Yet much more is happening in the desire of human beings to engage and adjust to their shifting environment.

Beyond Dopamine

Peter offers his own comments on the motivating factors inherent in an allostatic process.

> Lately, I have been thinking about what I label "sacred practice." This includes music. It includes art. It includes dance. And it includes sex. It's like we have a drive in our brain that tells us to eat and to drink. I'm hungry. It's time to eat. And you can shovel in something that will satisfy that very basic animal need. But then there are

higher-level needs that involve cooking something good. I think it is the same thing with pornography. Pornography can very radically satisfy this very basic animal urge. And with no demand and no effort you finish it. No thought or anything.

But it draws you away from the ability to interact with another person in an important way. I think that is the real problem with fast food and pornography (which is a weird form of fast sex). And they both become non-interesting after a while. You have to keep intensifying them. If it is the same thing over and over again, how satisfying can it be? That is the problem of this loss of personal engagement. Some of you guys play your own music. That's better for sacred practice. Passive activities are found in our listening and watching what other people have done. Or watching sporting events rather than playing them. Or watching sex rather than doing it.

What these passive observational activities do is give us a big flood of dopamine; however, in the long run, it makes us hungry for something more real. Our Gut might be fooled for a while regarding the possibility of nutrients coming from observation rather than participation and digestion. However, we soon have a "gut feeling" that everything is a bit "phony."

Beyond Rewards

What then is not "phony"? What is authentic and sustaining of an interweaving of challenge and support, as well as assimilation and accommodation? Bill Bergquist brings in the often-perplexing psychological phenomenon called "autotelic"—referring to human activity and adaptation that seems to need no desired outcome other than those contained in the activity itself:

One of the psychologists I most admire is Robert White. White posed the question: Why do we play? There is the notion of "autotelic," which suggests that play is

> important in and of itself. White goes beyond this notion of autotelic. He writes about the sense of competence that comes with play. Peter, I was thinking about what you had to say regarding prediction. Is there a prediction of competence. What does it mean to predict that we succeed in doing something? This relates to the work of Csikszentmihalyi who talks about the "Flow" experience and how critical this Flow experience is to human motivation.
>
> This links to what Peter is saying. The flow experience occurs when we are faced with a real challenge, but we have the sense that we can meet this challenge. So, whether it is on a rock face of a mountain, or dancing, or psychotherapy, or being a participant in a really good session as a physician, there is the prediction of competence, which certainly has a hit in many ways. What is the body's response to the assumption not of freeze but of engagement in a competent way. I assume this has a lot to do with one's healthy body.

Peter responds: "Yes. And that comes from being active. You gain confidence from competence. And that happens with practice."

Jeremy adds further insights regarding autotelic activities, focusing specifically on Csikszentmihalyi's concept of "Flow":

> The concept of Flow is an allostatic state – it is not homeostasis. Flow requires energy, and it requires challenge. It requires moving out of our comfort zone. I think of our comfort zone as the pursuit of homeostasis. And the pursuit of homeostasis leads to a whole lot of problems for us. The avoidance of discomfort.

Bill Bergquist notes that "Csikszentmihalyi would say that homeostasis is the state of Boredom". Jeremy adds: "Yes, I think there is a state of toxic boredom that leads to dysfunctional adaptation."

Conclusions

It seems that we prefer a life filled with purpose and competence to a life that is lived without purpose or any sense of effective agency. We prefer to live in a world that requires some new learning and accommodation, while also providing sufficient support, continuity, and secure assimilative frames of reference. We often look for excitement and the edge of challenge rather than looking for quietude and the edge of routine.

This is a fundamental Salus observation and conclusion. It is in the ongoing processes of allostasis and in the effective engagement of the Gut that we find the appropriate neurobiological mechanisms for the sustained effort to fulfill purpose and exhibit competence. While dopamine provides some of the neurobiological incentives for moving forward rather than remaining in toxic boredom, the opportunity for "flow" and for finding gratification in "autotelic" play is also profoundly the condition of "Flow." Our capacity to allostatically accommodate changing environmental conditions makes it possible to find flow.

Chapter Two

Salus Perspectives, Policies and Practices

The parameters of our body are not constant. They vary continuously. Variations are made not to correct errors. They are made in response to predicted needs. In most cases, the body is not maladapting. It is adapting the best it can, given bad information.

Apparently, we need predictions of love and safety. There are adjustments made in our body when we have this prediction of love and safety. We activate our parasympathetic system. Our Gut is prepared to receive that which is nourishing and life-giving. Whereas, if there is a prediction of punishment, a quite

different set of bodily adjustments is made. Our Gut moves into a protective mode. The usual parasympathetic state in which our Gut is prepared to operate is not available. We are in a sympathetic state, preparing for flight or battle. Our Gut must step aside so that energy can be devoted to potential physical activity.

It is in the ongoing processes of allostasis and in the effective engagement of the Gut that we find the appropriate neurobiological mechanisms for the sustained effort to fulfill purpose and exhibit competence.

Chapter Three

Metabolism and Mental Models

Dr. Caroline

At the age of fifty, I completed my doctorate and had been on and off multiple psychiatric medications to support stabilization of my continuing physical symptoms. It should have been the moment of triumph, but instead, my body was worn out. I had been climbing the corporate ladder in community services while also working part-time in private practice.

The cost of such relentless surviving was immense. I was diagnosed with chronic pain and adrenal fatigue, though no solutions were offered beyond psychotropic medication and the diet and exercise I had already practiced for years. Through my forties, I was shuffled from one psychiatric medication to another, each change promising relief, but none bringing real healing.

By then, I had lived for decades inside a paradox: I was a professional helper, a woman of education and resilience, yet I was also dismissed, doubted, and chronically unwell. My body told stories that medicine refused to hear. Still, I kept seeking, through food, therapy, spirituality, and holistic care. My journey was never just about surviving illness; it was about insisting that my story mattered, even when others tried to erase it, and that I believed there must be some answers to why and what to do to feel healthy. I had become a woman of education, achievement, and resilience, yet I was still dismissed, my suffering rebranded as psychological, my body's messages erased. And even in the face of dismissal, I refused to stop seeking.

At age fifty-two, I finally surrendered to an overdue colonoscopy. I had resisted scheduling it for two years, reluctant to add another medical procedure to the chaos my life had already become. But something inside me said it was time, and I carved out the space to get it done. Three days

later, the results came back: a rare and unusual form of cancerous polyps. They were malignant, yet miraculously, all of the tissue had been extracted during the procedure. Once again, I dodged a bullet. This was the third time in my life that I had brushed against death and been spared. I should have felt relieved and grateful. Instead, I braced myself, unaware that the year ahead would unravel in ways I could never have imagined.

It began with the death of my mother shortly after I learned of the colonoscopy. The next day, a robbery occurred. My storage shed was broken into, and everything was stolen, every piece I had invested in for my new private practice office, gone in an instant. Three days later, my son announced he was moving halfway across the United States. His girlfriend was pregnant, and he was leaving her and the baby. My heart wrestled between joy, fear, and grief at the thought of his absence.

Loss upon loss, but the week was not finished with me. My stepdaughter was shot and nearly killed while her boyfriend, right in front of her, took his own life. Before I could even process that horror, my stepson was arrested and incarcerated for selling drugs.

It felt as if the ground beneath me had been stripped away, leaving me dangling, unanchored. I was still reeling when, within six months, my husband left me for one of the many women he had been having affairs with. Later, I would find the videos he had stored on my computer, evidence of the multiple betrayals happening in our very home, played out with other women while I lived under the same roof.

The impact was devastating across every dimension: family, marriage, health, and personal security. One crisis might have been manageable, but the cumulative effect felt like an avalanche, leaving me breathless. I was no longer simply navigating challenges; I was living within a collapse. During this period, I became committed to any recommended alternative or complementary medical care. I explored biofeedback, neurofeedback, functional medicine, chiropractic kinesiology, IV nutrition, light therapy, and meditation to support a type of healing I had never experienced before. Through these practices, I began to develop

a deeper understanding of health and happiness that I had not experienced before.

Dr. Steven Bloor

Caroline continued to see me. However, it became clear that Caroline didn't really want to keep seeing the psychiatrist. She told me she was tired of the psychiatric medications; none of them helped her. She had read something about "adrenal fatigue" and sought out a local doctor who uses that term to help patients with Chronic Fatigue Syndrome. The only thing I knew to recommend to people with Chronic Fatigue Syndrome was exercise.

There was pretty good evidence of benefit from exercise, yet I didn't have the skills then to persuade a chronically exhausted person to start exercising – which would also give them a new dose of pain – so, to be honest, that felt like ironic advice to give someone who was suffering. I tried it with Caroline and, unlike many of my other patients, she slowly started to walk several days a week – pushing herself a little bit at a time to longer and longer walks. Also, unlike my other Chronic Fatigue / Chronic Pain patients, she began to ask for less and less Vicodin, which made me feel really good. We are finally making some progress!

But then, she underwent a horrendous avalanche of despair – deaths in the family, destruction of her home, disappointment with her son's progress into adulthood, a painful divorce from a philandering husband, and having to complete her dissertation for her therapist degree. Ouch! Her progress collapsed, new pains emerged, her fatigue worsened, and her GI disruptions resurfaced. I think we both felt defeated by this harsh turn of events. I began to tell her that I didn't have the resources in my practice nor time during our visits to help her. I re-did many referrals, adding Endocrinology, Allergy & Immunology, GI, Psychiatry – a long list of specialty referrals and a bunch of labs to help them find a way to help Caroline.

I told her I will keep refilling her Vicodin, but she needed to rely on these specialists to help her back toward health. My panel of patients had grown so large and I was adapting to a new Medical Record system that required hours of my time to document visits, so I couldn't see Caroline

for more than 10 minutes every 3 months moving forward. I felt some relief. Caroline seemed OK with it, but part of me wondered if I was just dishing this poor woman off to several specialists who would only complicate her life more. I wondered, but I still did it. Turns out, my worry was accurate.

6 months later she returned. Caroline was worse than I had ever seen her. Each specialist had come up with another new condition and new medications for her to take. They had discovered a new auto-immune condition that might explain many of her challenges, but it wasn't clear, and different specialists told her very different things to do.

Caroline was confused and exhausted by "having so many doctor visits, they keep contradicting each other, and they never seem to talk to each other, so I'm the only one who knows what the other one said. I feel like I'm the doctor and they are just consultants bickering over things. One starts a med and the next one stops it without talking to the first one. Then the first one yells at me for letting the other doctor stop it. I feel like I'm back in middle school, it's been awful."

Well, so much for my solution, my hope was that local experts would finally figure out how to help Caroline. I decided to refer her to a friend of mine (Dorothy Wellington) who had left the health system that was grinding me down and started her own "Family Wellness Clinic." She was barely making a living because she shared her income with several other professions she'd brought into her clinic. She got extra training in Functional Medicine and Lifestyle Medicine and approached each complex patient with a team-approach.

The patient and their family members had an initial Family Health session that was 90 minutes long and included a therapist, a physical therapist, a nurse, a social worker, the MA, Dr. Wellington, the patient and her family. She called it "Advanced, inter-professional team-based Family Wellness Care." It sounded amazing, yet impossible in my own clinic. 90-minute visits, nobody pays for that? The overhead must be extraordinary with all those professionals. When I asked her how she did it, she told me she hired new grads and had students from the other professions help round-out her team. They were newer and less

experienced, yet they could take more time to help dig more deeply into all the factors facing the patient.

Dorothy Welllington taught me about this new term called "Allostatic Load" in which all of the toxic influences on the person are delineated to get a genuine sense of all the contributors to worsening health. She called this "digging for the root causes" which took asking questions from multiple perspectives to get "the full picture of the elephant" referring to the Sufi story of the wise men and the Elephant – in which one wise man says "it's a tree trunk" another a "water hose", another a "sword" depending on which part of the Elephant the wise man was next to. Only by talking and sharing with each other could they see the entire Elephant.

That was like what happened when I sent Caroline to all those specialists. Wise in their own domains, none of them could see the whole Caroline, just their part of her. Dr. Wellington would be able to see Caroline fully, so I spoke with great reverence about my friend's new practice and sent her over to the Family Wellness Center with a note of introduction, summarizing Caroline's extensive history, sharing what we'd tried, what helped, what didn't, etc. I also let her know I'd be happy to keep seeing Caroline, but that I'd realize she needed a team-based, inter-professional perspective.

An important foundational principle of Salus is the acknowledgement and frequent re-evaluation of our basic assumptions—our "mental models"—regarding healthcare practices. We see evidence of this in Steven Bloor's reflections on the perspectives and practices of Dorothy Wellington. The important concept of Mental Models has been presented by Peter Senge in his book, *The Fifth Discipline*. He writes about mental models and Epistemology. Epistemology is about how we know what we know. Are we aware of how we see the world of healthcare and what we see in this world? Are we aware at any time of the mental models we have in place?

There are two types of mental models. There is the mental model that we espouse. This is the mental model that concerns our mission, our vision. And then there is the mental model that is in place. We are often unaware of this second mental model. It helps in understanding the formulation of healthcare policies and practices.

Sugar and Mental Models

At the start of one of the Salus monthly forums, Mitch Applegate offered the following observation. Our minds see all sorts of things. Where do we get these things? We must challenge ourselves to check our mental models, to recognize that we can take our models out and look at them. In fact, the highest functioning teams can do that. What is the mental model under which we are actually operating? Can we take it out and look at it? Can we recognize that if we don't deal with this model, if we are not aware of this model, then it will limit our outcomes to those that exist within that mental model?

That was Mitch Applegate's premise in setting up the trigger topic regarding sugar:

> My mom said 60 years ago: "Sugar is bad for you. It makes you hyper. She was a kindergarten teacher, so I'm sure that she knew this to be true. After the cupcake birthday, the kids were out of control for a while. Let's fast forward 50 years. Now there is an epidemic of fatty liver disease. Now, transplants for fatty liver disease that are nonalcoholic-based are the primary cause of the need for transplants. When one of our GI specialists counsels someone about fatty liver disease, he first talks about avoiding high fructose corn syrup. So, I started getting interested in this topic. It turns out that there is quite a bit of information out there about high fructose corn syrup. It is really a chemical that is added to food, although we think of it as a food.

We should take our mental models regarding sugar into our hands and recognize that we are all looking at this question regarding the use and impact of sugar through our mental models. Can we suspend them, and can we open up our discussion by asking if high fructose corn syrup is a toxin and the major cause of fatty liver disease? Can we examine the epidemic of fatty liver disease that we are seeing, as well as the potential impact of high fructose corn syrup on metabolic syndrome? Both fatty liver disease and metabolic syndrome are underrecognized. Amazingly, this is the case.

Metabolic Syndrome and Mental Models

Mitch indicates that he looks at his patients in the hospital and 90% of them have metabolic syndrome. No one has that diagnosis attached to their chart—to what is happening to them in the hospital. As a result, Mitch is changing what he talks about with his residents. He is changing his mental model. How could this have been going on for so long? And are we unaware of this?

And now Mitch is looking at it differently. It is everywhere in the hospital. The heart attack patients have metabolic syndrome. The stroke patients have metabolic syndrome. All the diabetics (except type one) have metabolic syndrome. Actually, most of the type one patients have this syndrome too. Mitch is blown away to discover that it is so prevalent. It is causing major problems. If we just limit our analysis to fatty liver disease, this is still a horrible thing. But high fructose corn syrup is probably causing a whole lot more problems. What is keeping us from seeing the outcome of this chemical in our foods?

An Example

We offer an example regarding the impact of mental models in health care. Mitch Applegate and Jeremy Fish helped establish protocols at the County Hospital to help prevent Pulmonary Embolism, which at the time, was the #1

unrecognized cause of death in hospitals (in the 1990's). They met with lots of resistance, skepticism, and "that never happens here" type stuff. Kind of like what Dorothy Welllington was facing with her Family Wellness Clinic. However, they eventually instituted important new ways to prevent those blood clots from forming by providing leg compression devices and subcutaneous injections of a blood thinner as routines for at-risk hospitalized patients. Lying in a hospital bed for days on end is risky. Walking around is lifesaving, as are compression devices and blood-thinners.

Jeremy Fish can remember being coached by faculty not at the county but at his medical school (which was a perfectly fine medical school):

> "Jeremy, don't you dare write anything that would imply pulmonary embolism unless we have diagnosed it, yes or no, because I don't want to get sued for even thinking about it." I thought, "That seems really strange." You are telling me that I shouldn't put our discussion about pulmonary edema in my notes because we are going to get sued. So, the fear mongering and the dogma is part of the mindset. We are there to only diagnose stuff that we can treat. I think that is part of physician mental models. I only diagnose that which I know how to treat. Everything else? I don't want to see it.
>
> That's why we don't screen for stuff. Metabolic syndrome has been around for a long time. It has been ignored because it is complex. It has four or five factors. Then, the fatty liver thing caught me by surprise. I am shocked. Just imagine back in the 1990s, it was all alcohol-related liver disease. The idea that fatty liver disease has now transitioned. That's normal now with the new generation that is growing up. Fatty liver disease is now an epidemic. Yet, it has been a slowly emerging, silent epidemic that is eating people alive. Our blind spots are part of what I think you [Mitch] are saying about mental

> models. Our mental models are blinding us to massive situations. I'm not sure what we call that: a lack of curiosity. There is the Cane developmental model—who identifies the fixed mind-set and the growth mind-set.

Mitch had talked about explicit and intrinsic mental models. His insights were right on!

Espoused Theory vs. Theory-in-Use

Mitch is talking about a concept that comes from Chris Argyris and Don Schön who were teachers of Peter Senge. Jay Forrester at M.I.T. was also one of Peter Senge's teachers. Peter Senge got the best of everyone. There is an espoused theory that Mitch is talking about. It concerns what we tell people are the principles by which we operate. The other mental model is what they call "theory-in-use." This is not what we espouse, but what we actually operate by. The problem is that what we operate by is what Mitch is saying exists as something of which we are not really aware. Or it is self-sealed. It is something that we are not supposed to discuss.

The mental model that Jeremy identified is very powerful in health care: if we can't treat it, we don't talk about it—or we refer it to a specialist (as was the case with Caroline's multiple illnesses). Bill Bergquist asks Mitch a question:

> Mitch, as the one person who is not a physician, I will speak for the 89% of the people in the world who are not physicians. What is the mental model being engaged with regard to the issue of high fructose corn syrup—a topic we first addressed during our last forum? You are saying today that it is a chemical. It is not food. The prevalent mental model is that it is corn--and corn is good.
>
> For instance, the population in Maine is consuming wonderful corn. So, corn is wonderful. So, how could corn syrup be bad for us? A mind-set that would shock

people is the redefinition of corn syrup as a chemical rather than a food. I grew up in Illinois, and we had corn all over the place. But it was horrible tasting, because it was for feeling hugs and other livestock (and perhaps now for producing corn syrup). So, how do we find a way for people to recognize that this is scary stuff? It is not like that nice cob of corn that you are going to get down at the local food market.

We live in an environment that is saturated with scary stuff. So, adding even more scary stuff to our diet has a major health impact. That's what really gets challenging. How do you challenge a mental model without flipping a person into wishing for an autocratic leader to make life simpler for them? How do you get people to think about scary, disturbing matters themselves, without having to turn to leaders who will reassure them that everything is fine, and nothing is scary? And what happens when the physician is also scared—or at least confused (as in the case with Steven Bloor).

Our environment is also filled with delightful stuff—such as fresh corn-on-the-cob. The problem is that corn links to wonderful memories. On Labor Day, all over America, we are supposed to have corn on the cob and chicken. The last thing in the world that we want is to find out that some evil thing is a derivative of food that is very close to us. What we have always enjoyed is now associated with something scary. That is the most frightening thing of all –this is an intimate enemy. We want to deny that corn is the enemy. Or we blame ourselves for not checking on the fructose content of the food we eat. We don't blame the producers of the products we consume.

Mental Models

We wish to alter the concept of mental models a bit. Perhaps, mental models produce a set of lenses that we deploy when perceiving and interpreting life experiences. We see everything

through these lenses. A mental model is an abstract concept. The notion of seeing everything through a set of lenses might make the notion of mental models more accessible when we are considering the daily decisions we make about our health—and, in particular, when we make judgments about our immediate environment that influence our allostatic adjustments.

Perhaps, we should look at mental models at several different levels. There are the big ones (often called paradigms), and there are the smaller ones, such as Mitch Applegate brings up about fructose. The big mental model is that food is good for us. Chemicals are bad for us. Mitch is talking about something that is more specific, which is linked to how the mental model is built, how it is reinforced by people with money. Rich and powerful people who have a stake in the game of marketing high fructose corn syrup.

Our lenses used to view food might be influenced by the marketplace in which we make judgments and decisions regarding what we eat and, more generally, the food we serve our family. We don't want to serve a dish of chemicals to our children for dinner. However, we are willing to serve food that is made more appetizing when laced with high fructose corn syrup. How about a bowl of sugary cereal for breakfast and a can of highly processed but flavorful spaghetti and meatballs for lunch? Our nutritional lens is obscure: we don't really know what is healthy. Conversely, our gustatory lens is perfectly clear: we are fully aware of what tastes good. Give me sugar, fat, and a dash of monosodium glutamate (MSG)!

Cultural Constructs

Another aspect of mental models concerns outcome. For example, we have a cultural construct of judgment regarding fructose corn syrup. This construct is about obesity, being overweight, diabetes, and liver disease. Our cultural construct indicates that these are self-imposed, self-caused illnesses. This is a pervasive mental

model. Wow, you have lung cancer. You deserve it. Because you smoke. You are fat. You deserve whatever you get because you're fat.

The Implicit Association Test (IAT) can be easily taken. It detects implicit biases. It is widely applied to matters of Race. Clinicians have used it for age, gender—and for obesity. Jack Westfall took it. He had no implicit bias for race or age; however, he had a hugh implicit bias related to weight. Actually, this bias was probably explicit about weight. Jack grew up in a family with obese parents. His brother had bypass stomach surgery and lost 150 pounds. Jack has had trouble with obesity.

We judge people's moral failures if they are overweight. We never judge the manufacturer. This is just like we did for years with Tobacco. We judged the people who smoked and not the tobacco companies. We finally got around that a little bit and began to condemn the tobacco industry. However, we still have some moral judgment in health care about all sorts of things. High fructose corn syrup is one of those matters that results in a phenotype we judge to be morally derelict.

Addiction and Prediction

We judge people and don't think of the cause. We don't think of the high fructose corn syrup as being the cause. We think of the moral failure of the person to moderate their intake. We don't recognize that high fructose corn syrup is addictive. And it is a chemical. It plays on all sorts of long-term, thousands-of-years-old neural receptors that we have in our brains and our bodies. The fructose takes advantage of those receptors.

Jack offers the following observation:

> I was talking to somebody who said that Starbucks figured out how to sell its products. But they didn't do it by addicting people to caffeine. They did it by addicting people to sugar. Very few people want to order drip

> coffee when they go to Starbucks. Most people want drinks laced with sugar. That's what people keep going back for. Starbuck's business model is not selling caffeine. It is selling sugar.
>
> We are now coming up with substitute addictions – such as the use of raw cane sugar. The alternatives to sugar are proliferating, much like the types of sodas that we drink. It is getting very hard to tell what the hell is in your drink. Patients will come and ask what is healthiest. Maybe it is sugar—but it is not much healthier. I find that this is getting complex. And the comment around consistency. This observation comes from Lustig's *Metabolical*. That is almost a bible on the impact of nutrition on the body. His big focus is on the profiting that comes from processing. It is in over-processing that the big-food production business tends to extract all of the nutrients from food.

Big-food concentrates not on the production of nutritious food but rather on manipulating the human being's need for nutrition. The human brain interprets processed food as meeting nutritional needs. This fits with the whole allostatic concept that Peter Sterling has brought up: "I drink a diet soda because it has no calories; however, my brain thinks that I have consumed sugar. Thus, my body makes my pancreas secrete insulin anyway". So, you don't really lose weight with these drinks.

Our body is providing a perfectly natural biological response based on our brain thinking that I have just consumed some sugar. In anticipation of the sugar, our pancreas secretes insulin. It is an anticipatory allostatic response, not a homeostatic regulation. If we are in an industry that just creates artificial flavor, then we can tell everyone that there are no calories. The mental model is that you can't get fat unless you consume calories. It turns out that you get fat without calories. You can actually lose weight by drinking milk compared to drinking a diet soda.

Something else is being sold regarding high fructose corn syrup. It is predictability. If you go into any Starbucks and you order a particular drink, it will taste the same as this drink ordered at a Starbucks somewhere else. Predictability is addictive, just as sugar and caffeine are addictive. This is a perfect storm in which big retail food businesses play a major role. You don't want to go to Starbucks and order your favorite drink, only to find out that it doesn't taste like it is supposed to. The same with McDonald's and Kentucky Fried Chicken. Predictability is a very important point.

There is something malicious going on. We are choosing in our society not to regard the toxicity of fructose sugar. People would say sugar is not good for you, but we are unable to practice in a different manner. We don't know if that is a mental model, but it certainly is a matter of serious concern. We also want to note that high fructose corn syrup and obesity are not a one-to-one connection. There are people with fatty liver disease who are not obese. At least not outwardly obese. They have visceral fat. Only 20% of the people are on the fatty liver side. So, corn syrup might not be directly linked to obesity.

Bill Gillanders observes that the matter of high fructose corn sugar is complex. It's not like there are a lot of people out there saying that sugar is good for you. No one is saying that you should take in a lot of sugar. It seems that a portion of the whole substitute addiction industry that Jack has identified is built around the assumption that sugar is bad whether it is found in high fructose corn sugar or just cane sugar.

We have rather complex models regarding the consumption of sugar. Bill Gillanders doubts that anyone would get a consistently positive response if you asked every person whether sugar is good for them or whether they should eat more sugar: "I don't think anyone would say, 'I really believe in sugar. I believe in excess calories. And I reject the idea that sugar is bad for you." However, what people will say is likely to vary from year to year (or perhaps month to month). It is good for us. Or it is OK if not

consumed in too great a volume. Or it is OK when it isn't really sugar, but a sugar substitute. It is never good for you, whether real or fake! It seems that our mental model regarding sugar may be malleable.

Substitution and Corn Syrup

Jack has pointed to a mental model that certainly does exist—and is not malleable. It is not only important but also widespread. People are in the business of making money off substitutes. Substitution is based on a strong mental model. We never want to deal with the absence of things. That is the matter of negative research results. We don't want to acknowledge negative results. We substitute positive results for the negative ones. We want "no bad news!"

The concept of a substitute industry is powerful. Health-oriented Gurus substitute one health-restoring practice for another. Caroline was not immune to the advice offered by well-intended (and sometimes not well-intended) advocates for "new, improved" or "newly discovered" treatments for all ailments. This included each of the medications she took as a "substitute" for the ones that were not working. While the health industry itself does a lot of substituting, the broader domain of food production is particularly aligned with a substitution mental model.

It is a matter of processing. It can be seen in the history of tobacco. Tobacco was a natural product smoked by Native Americans. Smoking didn't appear to cause health conditions for these Native Americans. We have ultra-processed the tobacco and turned it into cigarettes, which have killed many people. There are times when a part of our American culture is that we can do better than nature. We substitute human production for natural production.

We have arrogantly created something that ends up almost every time being unhealthier than the more natural way. High fructose corn syrup is one of the latest versions of this phenomenon. We

have created an alternative sugar that has got to be better. It's got corn in it! Bill Bergquist noted something similar during one of the Salus forums. He was doing some consulting in the country of Turkey:

> One of the women I work with as was one of the most successful CEOs in Turkey. She was the head of the company that produced formula for children. I struggled ethically and had eventually to get out of the consulting contract with her, because she said she was in the business of convincing all of the women in Turkey that breast milk is unhealthy. Furthermore, it is a sign of you being culturally backward. If you are not going to be a backward resident in Turkey, you need to get rid of the breast milk and use our formula. She was fully aware of the negative impact. I was shocked. I had to bow out of working with her. I thought this was profoundly unethical behavior on her part.

It is not just this CEO in Turkey. The manufacturers of Baby formula throughout the world have relied on substitution and created an international crisis regarding nutrition and childhood disease. Kids could have drunk their mother's milk rather than formula prepared with tainted water. Mothers could have transmitted their immunity to their newborn child through their breast milk. Instead, they rely on external sources of food that provide little protection.

There is the tale offered by Dr. Seuss of a wise (and not very honest) man making money by putting stars on people's foreheads. These stars are to hold great spiritual significance. Once everyone has a star on their forehead, this man makes money taking the stars off their foreheads: "Why have a star on your forehead when what will make you unique is the absence of a star. That is the real sign of spiritual maturity!"

The substitute industry operates in a similar manner. This industry encourages people to get food with sugar in it, but then, at some point, this industry says that sugar is bad for you. So, they now make their money off sugar substitutes. They now say that there is this substitute that is better for you than sugar. We suspect that we will go back and put stars on people's foreheads again. Actually, the substitute industry will declare that these artificial things aren't good for you. Sugar is really what you should get. We have a healthy sugar product here that's so much better than Stevia. So, we put the stars back on the forehead. The substitute industry is making money coming in and going out. The notion of a substitute industry is a very powerful and relevant concept.

Economics and Corn Sugar

It is important to note that the corn industry tends to overproduce corn. So, they have a byproduct called high fructose corn syrup. Either they are going to throw it away or sell it. This became a way to utilize excess corn production. Which is probably happening because of farm subsidies. You end up in this industry with a solution to the excess production problem. However, the corn industry must now find a place in our economy for this product (corn syrup).

Fortunately for this industry, there is no price being paid by them for the introduction of fatty liver disease. If this disease happened within a couple of months after high fructose corn syrup hit the market, and if livers had blown up, then we would have declared "that's a poison!" And it would have been stripped from the market within two months. However, a challenge exists because the high fructose corn syrup has had a slow impact.

How do we bring forth meaningful policy issues that slow down or block processes that produce outcomes that take decades to emerge? Randomized control trials are an impractical means of studying these slowly emerging outcomes. Are you going to do a randomized control study over a ten-year period of time? This

study is not going to be funded. Are we going to make children's livers fat? No. Our ethics become impossible. Furthermore, this type of study is very expensive. So, the industries are protected by our dominant mental model: you can only change policy based on results from randomized, controlled studies. And these studies are often impractical and unethical.

This is where policy flirts with politics. We're talking about corn subsidies. People in the United States allocate 2 ½ billion dollars a year to farmers so that they will produce corn that we don't need. We pay extra for farmers to produce even more corn.

Jack chimes in:

> I was telling someone the other day that the most important health policy in America concerns the US farm bill. The U.S. farm bill probably has a greater impact on health care than anything else. How do we keep rural hospitals thriving? They thrive in communities that have high subsidy payments. The county in which I work (Yuma County, Colorado) is the second leading corn producing counties in the nation. Hugh corn production. But it also gets large subsidies for wheat, cattle, and corn and soybeans.

As Jack notes:

> The county gets millions of dollars in subsidy payments that are essentially direct payments to farmers. Don't say this in a red state, but this is farm welfare. Farmers get $10,000 to either produce corn or not produce corn. They have money that they can spend. That's what keeps the rural hospitals alive. They thrive when the county has money. So, the farm bill is probably one of the most important health care bills. And the corn subsidy is one of those parts of the bill that has a major health impact. What do you do with all of the corn? We've started using at least some of it for Ethanol. There is a positive there.

Policy becomes politics when you are talking about the farm bill. The farm bill is a political piece. Try to cut subsidies. There is not a red or blue politician who will cut farm subsidies. We operate in a free market—except in agriculture.

The Perfect Storm: Big Agriculture, Big Pharma, Big Healthcare, Big Government, Big Food Production, and Big Food Distribution

We often talked about a perfect storm during these forums. We considered the interaction between six massive entities: agribusiness, pharma, healthcare, government and food production. There is a seventh entity. This is the food distribution (super-market) industry. We have talked about how this storm emerged. How these major industries interplay with one another. And how their alliance has become reinforced by politics and money. The critical question becomes "how do you find leverage with these Hugh powerful entities that are controlling the health of people living in America?"

One of the mental models that we have in the United States concerns businesses that operate in our country: Businesses should be able to do whatever they want. It is the consumer who has to be careful about over-consuming sugar, overeating, and becoming obese. Judgements are not made about a product being readily available and cheap.

It's your duty as a consumer to limit what you consume—and that is what a "free market" does. Except that's not what works, because we are not rational consumers. We go to the center aisles of the grocery store because we can buy more per pound in the center aisles than we can in the outside aisles of the grocery store. It seems that people's mental models don't follow what's healthy. Their models follow what is available and inexpensive.

Another piece of the puzzle concerns the lack of convincing evidence. Food-producing businesses are disputing the conclusion that high fructose corn syrup is bad for you. They put out literature that reports findings from a number of studies that stir and muddy the water. These reports make us wonder what we really know since there are all of these contradictory studies.

It is not clear unless you look at who sponsored the study. There really is an extreme bias in the outcomes. This bias has been broached in Lustig's *Metabolical* (Lustig, 2021). The meta-analyses are now so polluted with industry studies that these studies neutralize findings from the academic studies. This has had a disturbing dilutional effect. Unless you remove the industrial studies, your data comes out pretty much mixed. Those are attempts to broaden randomized controlled trials. However, it is still the same mental model regarding what proves efficacy.

Perfect Storm Two: Add Big Research to the List

There is also the purchase of researchers. Jack provides an example:

> We had the case in Colorado of a very prominent health-related researcher who was well-known nationally for doing health research. He ended up board-disgraced because he took a whole lot of money specifically to study the safety of high fructose corn syrup. It was really sad because he was a prominent proponent of health, but he ended up taking money from essentially the equivalent of the R. J. Reynolds of corn syrup.

Bill Gillanders had more to say about the meta-analysis:

> I served on the pharmaceutical and therapeutics committee of a major association for decades. It came out that pharmaceutical companies that sponsor research can actually suppress negative results. So, an awful lot of the prominent meta-analyses are distorted because the

> negative results or the non-superiority results were eliminated from the studies that were included. Actually, we had some brilliant clinical pharmacists on those committees. You could actually get all of the pharmaceutical-sponsored studies reconsidered.
>
> The meta-analyses were redone. Of course, things that were touted to be strongly in favor of position A or position B turned out basically to be noninferiority studies when you included all of the studies, including those with negative results. It has been well published that even prominent academic journals, like the *New England Journal of Medicine*, tend not to publish studies that show no significant differences.

The editors of these journals are interested in studies that show positive benefits. While they should publish an equal number of studies that show no benefits, these studies tend not to be published in these journals. So, corruption exists at multiple layers of the system. It is not just corruption in obtaining evidence. It is also the manipulation of evidence that is obtained to yield desired outcomes and veer away from those outcomes that are not desired. Corruption also exists in the ability to suppress those studies that counter the message being delivered by the pharmaceutical and agri-business industries.

Bill Bergquist extends this observation of a mental model that yields corruption to his own discipline:

> This is an overarching mental model that operates in many disciplines--including my own discipline of psychology. You cannot get your study published when you have no significant results. Much of our understanding of psychotherapeutic outcomes is profoundly distorted because studies that show there is no positive outcome don't get published. It is only the ones where there are positive outcomes that get

published. It helps if there is money behind the study—such as money that is provided by the institute where you get trained to do this particular therapeutic procedure. As a result, there is a loss of trust not only in the field of medicine but also in the field of psychotherapy.

It is a broad mental model that allows only positive feedback (negative feedback is ignored). In virtually all disciplines, the "good news" (affirming) studies are published and celebrated. The "bad news" (disconfirming) studies are buried. Applying the distinction drawn by Argyris and Schön (1974), the espoused theory is that we are interested in all information. We are open. We want to be informed. Scientists learn more from non-results and negative results (failures) than from positive results (successes). However, our theory-in-use prevails: If you don't obtain a positive result at the .05 level or .01 level of significance, then you don't get published.

Three Mental Models

Three conservative mental models in American society that impede progress in American healthcare were identified by Salus Health Forum participants. First, there is a prevalent model that business is and should be free and unencumbered. Second, consumers are personally and rationally responsible for the choices they make. We think there is a third model that is particularly damaging. This model concerns governmental ineffectiveness. We assume that our government can't solve anything. Don't turn to the government for help, because all they do is encumber businesses and make everything more expensive and bureaucratic.

The DMV is often used as a key example. All of us have sat there for two or three hours waiting to get our license. It is much better to do it online and have it sent to you through the mail. But if you have to go to the DMV, the poor service is used as an example of what government is like. Yet the same people say that the

government must run the military because that is the only efficient way to run the military. We spend a lot of money on military operations that are run by the government. We have bought into a pretty broad-based mental model regarding government, particularly over the past thirty years. We would flag it around the Reagan era. He was a very persuasive spokesperson for this model. We are still living with it.

There was a whole lot more pure academic research in health care before businesses were let loose and the government was criticized. There was abundant freedom, and faculty were kind of untouchable in academic settings. Conditions are not like that anymore. Even tenure is a question mark now. This was a sacred feature of academic life. Faculty were protected from outside influences. These safeguards are being stripped away. That's part of the changing dynamics in our contemporary society.

We question this diminution of the government's benefits. For instance, the University of California is a government-run university. Several of the healthcare forum participants spent time there and learned a lot. We are not sure that our government is unable to do anything. Sometimes it does seem to work. This is part of where we get trapped. Our government is supposed to help us. There was a time when we actually admired our government. We might need to trust this sector of our society again if Salus P3 is to prevail.

Conclusions

During the Salus forums, we talked extensively about mental models and where we see the mental models applied. We became more expansive in our understanding of mental models that we espouse and the lenses through which we are actually looking. It was intriguing to engage mental models and lenses when seeking to understand the promotion of alternative sweeteners.

We might even expand beyond our view of these alternatives as a matter of food-related marketing. As Mitch Applegate noted, a cultural lens may be involved:

> Maybe it is something about capitalism. How in the world did we go from sugar is bad to a switch toward alternative sweeteners—and not be aware of what we are doing? How did this happen? How do we, as physicians, sit in front of our patients and prescribe a pill when we know that what is being eaten, regardless of willpower and judgment, is probably going to make a bigger impact (if we change one thing) than the pill we have recommended to treat the symptoms? How did we get brought into this dilemma? We are wise, knowledgeable professionals—yet it took me a couple of years to uncover the toxicity of fructose corn syrup. I was blind to this. How did the dominant mental model about sweeteners get put in place. I have no idea.

Perhaps we are getting at the nature and source of this mental model with all of the ideas we have been offering during this forum.

There is a wonderful quote, "Good food is medicine. Bad food requires medicine." Big agri-business and big-pharma are collaborating in their effort to continue reinforcing that Bad food requires medicine. They will reinforce this platitude as long as they can get away with it. How do the rest of us catch up with the fact that for the past fifty years, they have been getting away with this biased statement?

They learned from the merchants of doubt—that Jack Westfall knows well from the tobacco industry. Those in the tobacco industry were not ultimately in the business of selling tobacco. They were in the business of selling doubt regarding the harm caused by tobacco. That has continued and proliferated so that now doubt and skepticism regarding science have flourished.

Even physicians are skeptical about scientific data. What does it mean for the general public if physicians are acknowledging the corruption of science? The general public doesn't seem to be learning that business interests are corrupting the academic scientific realm. However, this corruption will soon become evident to many segments of the general public. This will lead to further diminishment of faith and trust in science--which is alarming.

Diminished faith and trust could be deadly for all of us regarding many challenges. And not just medical treatment. We may become even more skeptical about climate change and the degradation of our environment. We would suggest that obesity is the climate change of medicine. It is one of the highly complex challenges that don't lend themselves to easy solutions. It is ripe for a comprehensive Salus-P3 solution. We address the challenge of obesity in one of our later chapters.

Chapter Three

Salus Perspectives, Policies and Practices

High fructose corn syrup is probably causing a whole lot more problems. What is keeping us from seeing the outcome of this chemical in our foods?

That's why we don't screen for stuff. Metabolic syndrome has been around for a long time. It has been ignored because it is complex.

We judge people's moral failures if they are overweight. We never judge the manufacturer. This is just like we did for years with Tobacco. We judged the people who smoked and not the tobacco companies.

Something else is being sold regarding high fructose corn syrup. It is predictability. If you go into any Starbucks and you order a

particular drink, it will taste the same as this drink ordered at a Starbucks somewhere else.

People are in the business of making money off substitutes. Substitution is based on a strong mental model. We never want to deal with the absence of things.

It is important to note that the corn industry tends to overproduce corn. So, they have a byproduct called high fructose corn syrup. They either are going to throw it away or sell it. This became a way to utilize excess corn production.

We often talked about a perfect storm during these forums. We considered the interaction between six massive entities: agribusiness, pharma, healthcare, government, and food production. There is a seventh entity. This is the food distribution (super-market) industry. And we can add on Big Research.

We have talked about how this storm emerged. How these major industries interplay with one another. And how their alliance has become reinforced by politics and money. The critical question becomes "how do you find leverage with these Hugh powerful entities that are controlling the health of people living in America?"

"Good food is medicine. Bad food requires medicine." Big agri-business and big-pharma are collaborating in their effort to continue reinforcing that Bad food requires medicine.

Chapter Four

The Gut and Health at All Levels

Dr. Caroline

The following decade unfolded as yet another chapter of medical uncertainty. I entered menopause just a few years before my fiftieth birthday. As I began to piece my life back together, much like the Scarecrow in The Wizard of Oz stuffing himself after being scattered by the crows, I pushed forward to create a new life as a single woman navigating menopause. Physically, the years were unkind. I was once again diagnosed with an autoimmune disorder, Epstein–Barr virus. This led me back into the familiar cycle of searching for meaning amid the continued absence of an effective medical solution.

Despite these challenges, I persisted in seeking both understanding and relief. Traditional medical interventions continued to offer limited answers, prompting me to explore complementary and holistic approaches in search of more effective solutions. Each setback reinforced the reality that my health journey would require resilience, self-advocacy, and a willingness to navigate both conventional and alternative avenues of care.

As I approached the age of 63, I felt as though I had made significant progress in restoring my health through consultations with holistic, naturopathic, and functional medicine professionals. However, following my first COVID-19 vaccination, I experienced a sudden and dramatic decline in energy, accompanied by the return of severe, chronic pain as if a switch had been flipped. Over the next five years, my focus shifted to understanding how to optimize physical outcomes through the integration of neuroscience, addressing metabolic abnormalities, hormone replacement therapy, and targeted complementary alternatives, such as nutritional support. I began to work at a facility that emphasizes integrative health.

This approach marked a new phase in my ongoing journey toward health restoration, integrating evidence-based medical strategies with holistic and functional care to achieve the best possible physical outcomes. It has become abundantly clear that, without a progressive, multidisciplinary team of practitioners, it is exceedingly difficult to identify effective solutions for individuals who have experienced significant adverse childhood events and the subsequent cumulative burden of polystatic stress, without sufficient polystatic support to counteract it.

Dr. Steven Bloor

Caroline still drops in now and then to update me on her life. Instead of endless concerns and symptoms, she talks about her strengths as a person, how resilient she has become as a result of all the life challenges she has faced or overcome. She talks about how she has learned to transform her suffering into a positive, meaningful narrative that gives her the energy to help others. She is working full-time as a therapist and exploring newer modalities to dig more deeply into helping those suffering from mental, behavioral, and physical symptoms.

She quickly reminds me she is not an expert in physical ailments, but she did suggest supplements and has been trying to partner with local physicians to help other patients like herself find comprehensive, advanced primary care. She works part-time at Dr. Wellington's clinic as she was one of the early success stories of that practice, and she's teaching at the local community college, hoping to help younger people recognize that there is a positive pathway for them through all the suffering our youth are experiencing these days.

I feel a bit embarrassed about my own journey into understanding fully how to help my patients no matter what is going on. I've grown as well into realizing that I am a partner for my patients and the key they need from me most is the curiosity to keep asking questions and seeking potential solutions, and the courage to stick by them as they struggle through their health challenges. I'm going to read-up on Allostatic Load and the functioning of our Gut (and its tie-in with the nervous system). I want increased understanding of anything that may help me get a

better sense of the many factors contributing to the stress and illness with which my patients are suffering.

I'm no longer that young physician hoping to be a hero in the hospital. I'm now a more humbled and hopefully wise partner through my patient's journey through suffering and health. I'm very grateful to Caroline for helping teach me how to be a better doctor, for her and for others who seek out my care. I think I'm going to retire from this bedeviled health system I'm working for and work part-time with Dr. Wellington a few days a week. I think I will find that far more fulfilling than filling out all this paperwork to convince a hostile health plan to send me $20 for a visit. Enough is enough.

Several times during the multi-session Salus Health Care Forum, attention was directed to a unique perspective: what if the health care system is itself to be considered "the patient." This fits with the systemic perspective that resides at the heart of the Salus Biopsychosocial model. This Salus-P3 approach begins with the assumption that many elements of a system are connected to one another, even when they are operating at different levels of the system.

It is appropriate, therefore, to consider ways in which both diseases and treatments concerning individual patients in a healthcare system might connect with (and even replicate) the diseases (dysfunctions) and treatments to be considered by the healthcare system itself. Perhaps this is the direction in which both (now) Doctor Caroline and Dr. Bloor are moving.

Moving to this perspective, Gay Teurman proposes that some operations of healthcare systems might operate like the Gut in one's body. She reflects on her own experience inside the current health care system. Like Dr. Bloor, Gay is not pleased with what she has seen and experienced in contemporary healthcare systems.

She looks at the people she is attempting to help. They've seen medicine, they've seen holistic care, they've seen both. They've been around the gamut, and nothing that they've been incorporating is working. Often, nobody's looking at their Gut or their constitution based on all things, biological, mental, and neurobiological challenges. The system is clogged with information and actions that do not relate to one another. Nothing is synthesizing (digesting) this information, coordinating these actions, or addressing the outcomes (products) of this dysfunctional system.

As participants in the Salus Forum, we decide to view the health care system as an unwell patient needing help. In searching for a diagnosis of the "ailment" we might ask: What is the Gut of the health care system? Is this Gut being overlooked like the guts of people we treat? Why aren't we looking at that nexus as a means of shifting how we all integrate what we all purport that we want to do—which is collaborate more and have a care system that's more a wellness care system than a medical management system. Why is it all so fragmented? Why are so many of us fragmented?

As a health-oriented psychologist living and working in one of the largest counties in the State of California, Dr. Teurman still has difficulty with integrating referrals back and forth with medical community doctors, neurologists, and medical professionals. She can't even have them understand how what she could do might serve the patient. As a practical person, Dr. Teurman doesn't live in possibility very long. She asks: How do we make integration happen?

As we were thinking about the health care system and considering it to be the patient, we might ask: What's going on in the patient's Gut? Is it appropriate that we ask this question, because the Gut is where we focus from a biological perspective? As the patient, how does our "Gut" process everything? The way that we look at a patient—like Caroline—in an integrative

manner. The way that we treat a patient—as Steven Bloor would hope might occur—from an open, curious viewpoint.

The Gut's Function: Transformation in Our Body and Our Health Care System

The human Gut, or the Gut of any organism, is in the business of taking some foreign entity that is brought into the body and somehow transforming that foreign entity into something that provides energy and nutrients for this body. There's a transformative process. Somehow, a medical system is one that takes a foreign entity called disease, illness or injury and does something to transform it into health.

This being case, then we should ask: Is our healthcare system diseased? Are we looking at dysbiosis? The Gut of this healthcare system is no longer working as it was intended, or maybe it never has. But if the Gut is the central organ that supports our nervous system, our brain, all of our veins, our blood flow, if the Gut is that central to shifting dis-ease, where do we start and how do we treat our healthcare system?

Perhaps it is best to first examine what it means to conceive of an "Organizational Gut."

The Organizational "Gut"

We might first ask: Where is the Gut in an organization? It would seem that the C-Suite is the Brain, and the Informal Network is the Central Nervous System. What about the Gut? We can probably equate the Gut's Microbiome with the employees of the organization. But, what about the Gut itself?

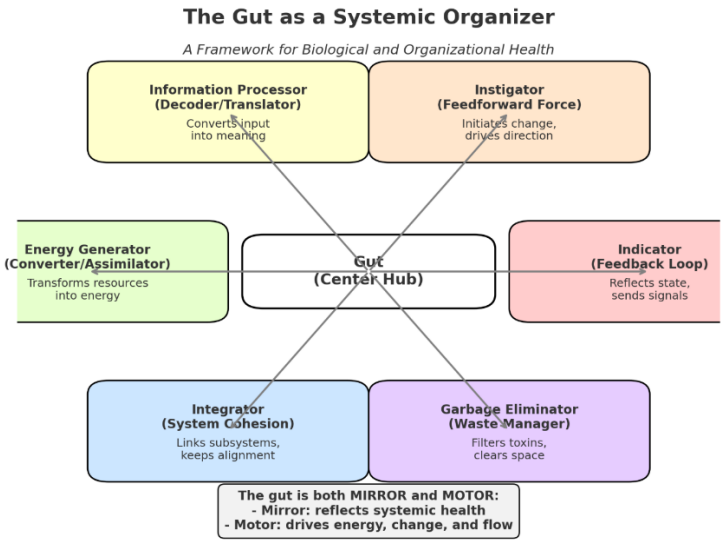
It seems that the Gut serves many functions and operates as both a mirror that provides information to other parts of our body and as a motor that generates the energy to drive our body. Furthermore, our Gut is both an Assimilator that converts food to energy and an accommodator that acknowledges shifts in the

body's status ("gut feel"). In many ways, our Gut operates like a committee that is meeting diverse needs in our body and is coordinating these needs.

Committee of the Gut

There are many ways in which human beings bring together entities from inside their mind and body along with entities from outside their body in order to create meaning or energy. At nighttime, this assembling and assimilation often occurs through our dreaming function. Deirdre Barrett (Barrett, 2001) has labeled this function "the committee of sleep." When we are awake, there is similar dream-like assembling that occurs when we are daydreaming or engaging in meditation or other mindfulness processes.

However, the major assimilation we do during the day involves something other than memories, images or psychological desires. Vital assimilation occurs when we convert the food we digest into energy. However, the Gut is much more than just a digestive organ.



The Gut serves as a central hub within a network. It represents six interconnected roles that reflect how healthy systems operate. As with the dreams we weave, the Gut operates like a committee, with many contributing agents. Within the metaphor of the "Committee of the Gut," each role can be envisioned as a member with distinct responsibilities that together ensure the overall health and adaptability of the system. This committee evaluates incoming substances, decides how to process them, and coordinates responses to meet both immediate needs and long-term balance. By acting collectively, the committee sustains both the integrity and the flexibility of the entire organism.

Self-Organization: Viewed from a systemic perspective, the Gut is not a passive organ but a self-organizing center. As we find in many systems, the Gut, being the central hub, has a central committee. The Gut embodies the dual functions of:

- **Indicator** (diagnostic, reflective, sensing the state of the whole)
- **Instigator** (active, generative, reorganizing, and catalyzing change).

In other words, the Gut doesn't just belong to the system; it *organizes the system* by bridging matter (food), meaning (information), and momentum (energy)

Assimilation (that which is easily digested) versus accommodation (that which is new and requires an altered process of digestion). Parallel to the process of learning (Piaget, 2001). Piaget believed that learning is a dynamic balance between assimilation and accommodation, a process he referred to as equilibration.

- Too much assimilation → rigidity (clinging only to what is familiar).
- Too much accommodation → instability (constantly shifting frameworks with no coherence).

As we have found with the process of Allostasis, the Gut reflects Piaget's model: it takes in what can be easily digested (assimilation) but also adapts its processes when confronted with new foods or substances (accommodation). Similarly, the Gut grows by both consolidating what is familiar and reorganizing itself in response to the new. In both cases, the goal is to transform the outside world into something the system can utilize without losing coherence.

Members of the Committee: We have identified six members of the committee. There are undoubtedly additional functions. However, our preliminary list should provide us with a vivid image of the many functions being served by our Gut.

Indicator Role (Feedback Loop): The Gut will act as a sensor and reporter, providing real-time data about the biological system. Signals such as hunger, bloating, discomfort, or even "gut feelings" are feedback loops that inform the brain and body about current conditions. As is the case with many (if not all) systems (biological or otherwise), the Gut plays an important modulating role. It acts as a kind of dashboard, revealing system stressors (e.g., poor diet, unresolved emotion, microbial imbalance) before they escalate into breakdowns elsewhere.

Biochemist Role: This committee member functions by testing the level of toxicity, status of neurotransmitters, and introduction of a "new" ingredient that is not often processed by the Gut (accommodation).

Telegraph Operator Role: This member facilitates internal communication by sending messages to other committee members. What do we do about processing or expelling this "new stuff"?) The telegraph operator also facilitates external communication by sending information to the Vagus nerve, which sends the message on to the brain. Therein lies the production of neurotransmitters (serotonin, dopamine, GABA), generating immune responses, altering mood, decision-making,

and energy distribution. In systems language, the Gut is a driver node, an initiating force that can reorganize downstream processes, from sleep quality to immune resilience.

The Processor Role: Utilizing the microbiome or microbes, this committee member changes the chemical state of the Gut by adding (changing the ratio of good and bad), killing (reducing the number of bad) microbiota or microbes. The Gut processes raw inputs from food, toxins, and even psychological stress and translates them into meaningful signals. It serves as both a decoder and a translator in the system, much like a data team converts raw numbers into actionable insights.

The Contributor Role: This committee member's responsibility is to generate usable energy through digestion and absorption literally. It takes in external resources, breaks them down, and redistributes them to the system. In systems terms, it is the operations department, the machinery that ensures resources are converted into usable forms and allocated efficiently.

The Executioner's Role: A biological executioner refers to a type of cell or organism that plays a role in programmed cell death, also known as apoptosis, a natural process that eliminates unwanted or damaged cells in multicellular organisms. At times, we may use antibiotics to facilitate this function. Biological executioners are often involved in signaling pathways that trigger apoptosis or an immune response by targeting and destroying infected or cancerous cells. As is the case with many systems, the Gut utilizes the executioner in its need to rid itself of dysfunction in the bodily system.

Exit Manager/Garbage Sorter Role: This committee member decides what stays in the Gut and what is expelled. The Gut acts as both a filter and an eliminator, separating nutrients from waste.

Sorting: Like a recycling plant, the Gut distinguishes absorbable nutrients from indigestible or harmful substances.

Detoxification: It works in conjunction with the liver, bile, and microbiome to neutralize toxins and pathogens.

Clearing Space: Waste removal prevents toxicity, inflammation, and system breakdown, making elimination as crucial as absorption.

Just as many other systems rely on various departments to separate valuable resources from unnecessary materials, the Gut's functions mirror roles such as quality control, waste management, and risk assessment. The "Exit Manager" resembles a compliance officer who ensures only beneficial elements are processed further, while harmful or non-essential items are effectively removed to maintain overall health and operational efficiency. Collaboration between departments, with the Gut working with the liver and microbiome, reflects teamwork across units to safeguard wellbeing and productivity.

Without this function, the system gets "clogged," and a buildup of waste products can destabilize every other organ and process.

Instigator/Generator/Assimilator Role: The Gut acts as a key communication center, connecting the nervous, immune, and endocrine systems. It works like a hub, keeping body "departments" in sync:

Nervous system → messaging and quick response

Immune system → protection

Endocrine system → hormone control and adaptation

It does not just reflect the system; it drives it. It creates fuel, initiates the change, and integrates the new into the existing.

Similar to the coordination office in other systems, it avoids isolation and ensures all parts share information. The Instigator/Generator/Assimilator role functions as a chief of staff or central coordination office, facilitating collaboration, promoting information sharing, and maintaining alignment. In all

systems, this function prevents stagnation, powers growth, and ensures new elements become part of the whole rather than destabilizing it.

Together, these six roles show the Gut as both mirror and motor:

- A mirror reflecting the health of the entire system.
- A motor, generating energy, driving change, and keeping processes in motion.

Healthy biological systems require not only intake and generation, but also filtering, integration, and elimination. The Gut teaches us that survival and renewal are inseparable: you cannot grow without also clearing space. Perhaps Caroline needs a bit more clearing or space in her Gut. The healthcare system that is treating her ineffectively might also have to clear itself of outmoded mental models.

Culture and Climate

The assimilative process of an organization's "Gut" is found in the *Culture* of the organization. The *Climate* of the organization represents the current state of the organization's Gut. The culture of an organization is equivalent to an individual's personality or character. One's personality is established early in life (or inherited) and is very hard to change later in life. The "culture" of one's Gut is measured by one's ongoing capacity to effectively process the food coming into one's body.

If we rarely have an "upset stomach," experience diarrhea or constipation, and need few Tums to counter an "acidy" feel and few pro-biotic supplements to ensure a fully operating Gut, then the culture of our Gut can be considered gastroenterologically "strong." Signs of a weak Gut include nondigested particles in the stool, frequent diarrhea or constipation, bloating, abdominal pain, and heart burn. Much as in the case of personality, a strong or weak Gut often seem to remain with us for extended periods of time. For some of us, the Gut is our friend and aid to our strong

health; for others, the Gut is often the enemy and a barrier to strong health.

When considering the Gut of an organization, we can similarly examine the extent to which the daily activities, expectations, and narratives of the organization enable and reinforce a positive sense of this organization's "health." Emphasis is placed on the organization's accomplishments and its future. As noted by Edgar Schein (Schein, 1992), organizational culture provides a comprehensive framework for the generation and interpretation of the underlying beliefs, values, and practices that pervade an organization.

Identification of an organization's culture requires assessment of the artifacts (rituals, narratives, etc.) and behaviors operating in the organization, espoused values that are frequently articulated by members of the organization, and underlying assumptions regarding the impact of specific behaviors on the functioning of the organization. The "guts" of an organization might be on display with the observation of these operations.

The climate of an organization is equivalent to an individual's mood at any one moment in time. The mood can shift based on changing in one biological condition (allostasis and somatic template) and one's psychosocial environmental conditions (Polystasis and psychosocial template). Climate can be measured by: (1) the acidity and Ph Balance (morale) of the organization and (2) the proportion of good and bad bacteria ("good" and "bad" employees/contributing and blocking behaviors (force field analysis).

At the organizational level, the climate of an organization is determined by such temporary factors as formal (and informal) news about the current status of the organization (market share, level of productivity, customer satisfaction reports), an inspiring motivational speech made by a leader of the organization, or the shifting status of a rival organization. The "mood" of those

working in and with the organization will change with shifts in the news.

Polystatic adjustments are made based on the anticipated impact of this news on an employee's or stakeholder's status. Organization climate can be measured with employee morale assessments, and indirectly with rates of employee sick leave and daily levels of productivity or quality of service being offered. The "guts" of an organization does change from day to day, and even from hour to hour--especially in an environment that is filled with the VUCA-Plus conditions we consider in some depth later in the book.

Assimilation and Accommodation in Balance

The Gut we have just portrayed is both one of stability (culture) and change (climate). At both a physiological and organizational level, the Gut is operating like Goldilocks: there can be too much assimilation and too much accommodation. Too much accommodation leads to toxicity. There is too much bad bacteria and/or not enough good bacteria (dysbiosis). The dysbiosis, in turn, creates a "leaky" Gut. The lining of the Gut becomes permeable. Toxicity leads to the GI tract, which leads to the bloodstream.

In an organizational setting, too much accommodation results in too many new entities from the outside environment to process and adjust to. We can introduce additional warriors in the organization (those fighting for the good cause). These are the probiotics.

We may change the product or service we are delivering within the organization. However, this doesn't change the toxicity. The disease remains even with a change in the "character" of the organization. The toxic Gut remains in place. The culture remains in place even with a temporary change in climate brought about by new leaders, changing polices, or new compensation systems.

Assimilation in an organization's Gut can be aligned (destructively) with our search for Serenity in place of VUCA-Plus (Bergquist, 2025). There is "no bad news." Everything is aligned with some long-established values and purposes. More constructively and appreciatively, members of an organization can search for what is authentically positive within their organization.

Embracing an appreciative perspective, members of the organization can identify, celebrate, and learn from that which is operating in a successful manner in their organization (Cooperrider and Whitley, 2005). While the Gut works toward parasympathetic activation at a physiological level, it works toward a "legitimate" climate of appreciation, safety, and agility at an organizational level.

Direct and Indirect/Integrative Functions

If the Gut serves as both a mirror and a motor, then how might these two functions show up in the way an organization is structured? The motor (instigator) in an organization is represented in direct services. These direct services include the organization's production functions and/or the customer services that it provides. The mirror (indicator) in an organization is represented in the indirect/integrative services of the organization. These services include functions such as HR functions, planning, institutional planning, and training. The direct services may change in a relatively easy manner (tied to the Climate); the indirect/integrative services are much harder to change (tied to the Culture)

The balance between instigators (direct services) and indicators (indirect/integrative services) is critical. As Lawrence and Lorsch noted many years ago, the ratio of direct to indirect services tends to change over time and as an organization increases in size (Lawrence and Lorsch, 1967). In "youth," we propose that the organization's Gut primarily provides direct (instigating)

services. The indirect (indicator) services are secondary or fully integrated with the direct services. Those owning or running a small business or operating a small clinic do everything. They are both the boss and "dishwasher." Similarly, when we are teenagers and even younger, there is nothing that stops our energy and our dedication to leading a full, purposeful life. There is no need (nor time) for a doctor or physical therapist.

As we individually grow older, a greater proportion of our bodily functions is devoted to simply holding us together. We become less "efficient" in our bodily functioning. The number of our body mass index grows. We spend a greater proportion of our time at the doctor's office and at physical therapy than at work. Caroline might have to look forward to even more health-related challenges as her body becomes less efficient and more vulnerable to illness and injury.

We propose that a similar change in our Gut occurs over time. We may have fewer instigating initiatives in the Gut as we grow older. At the very least, we are likely to find our Gut growing "weaker." More attention must be paid to alleviating these weakened conditions.

The integrative, indirect services operating in our organization's Gut would similarly require more attention. The direct services are more likely to become a bit "cranky" as the organization becomes more vulnerable to stagnation and routine. We must devote more resources to holding the organization together. Our attention is directed toward matters of morale, equity, and mission, more than to matters related to just keeping up with the demands for products or services that are present when our organization is young and prosperous.

Central Organizer or Self-Organization

We conclude this foray into consideration of organizational guts by posing a challenge: Is our organizational Gut a central organizer? Or is this function served by our Brain? Perhaps the

central organization takes place as an alliance between Gut and Brain. It is even more likely, as we have often mentioned in this book, that there is no central organizer. Our body may be self-organizing.

As we have noted, complex adaptive systems are self-organizing. Given this observation, we have to ask: Is there an organizing Gut? Does the brain ever rule? Or is the human biological system self-organizing without a central organizing entity? Perhaps, like flocks of birds and swarms of fish, each sector of our body and mind is influenced by their "neighbor." This neighbor could be a nearby organ (such as the close location between the amygdala and hippocampus) or an organ that is closely connected by neural pathways (such as the neural links between many parts of the Gut and Brain).

The Dysfunctional Organizational Gut

Given this overview and consideration of the way in which organizations might be considered to have a Gut, we are ready to consider the nature and status of an "organizational gut" that might be operating in contemporary healthcare systems.

Disjointed

Our integument or our intestines are actually connected to each other; however, there are no connections in our health system. It's disjointed. It would be as if part of the bowel has been resected and no one sutured it up. So, a lot of spillage happens. We can imagine people in a health care system flowing through this broken system. That means people are spilling out all over the place in different locations because they think they're going through a system. However, they're actually only entering into some very potentially profitable sections that are quite ordained with great powers.

As we have already suggested, the "Gut" of the health care system is an interesting metaphor. Jeremy Fish has previously used a

castle metaphor for healthcare, where there are several doors. Many of these doors are gated and secured, so no one can enter. And then you have the garage door, which is the emergency room where everybody gets a garage door opener. Patients can just go in there, but they think now they've entered the integument or the inner workings. Yet often, using the metaphor of the Gut, they are vomited out of the emergency room without having gotten much help.

Jeremy's castle operates as a digital system, with operations being clearly specified. While his castle is more of a mechanical metaphor, the Gut metaphor is oozy. It's organic. It's messy. It's not tidy. The Gut operates as an analogical system with a bit more of this and a bit less of that. As a sloppy system, the Gut can be both helpful and harmful, much as antibiotics may help one part of the system but create havoc in another part of the system (especially the Gut).

Are there solutions inside healthcare that work for one small element of it, but do plain havoc on the central processing system? An antibiotic-like organizational intervention would mean that there is an indiscriminate attack. Something that's actually very healthy is being destroyed. What would be an example of attacking something in healthcare that's actually quite healthy?

Fee-for-Service

An easy example of the dysfunctional attack is fee-for-service payment. Fee-for-service works really well at times. You do something, you get paid. But it also then hurts, because suddenly, it drives more widgets rather than health. So, you're buying sick care, and you're buying sick widgets rather than creating health. This is an example of one part helping and one part hurting. Fee-for-service financing really hurts primary care and a lot of direct clinical care, because it creates an incentive for primary care doing more rather than better.

There's outstanding evidence that of all the things in healthcare, the only thing that's been shown to improve life expectancy and quality of life, is the amount of primary care that's delivered in a community. We can assume that primary care is a good thing. However, in many parts of the United States, health care critics have been trying to dismiss primary care for quite a long time. There are advanced practitioners who are dismissive of primary care. It's important that primary care not be dismissed. We have to recognize we're doing real damage when we introduce something like fee-for-service that can disrupt the provision of primary care services.

The Gut's Product: Source of Disgust and Discard

We would note that the Gut's product is a really embarrassing part of the body. It's taboo to talk about it. It's not something we talk about in polite company, but we're realizing more and more how important the Gut is as the second brain. As a mirror and motor. As a seat of intuition. As a part of our body that communicates frequently with the first brain. That controls many aspects of our health—psychological, emotional, and physical. Yet the Gut and its byproduct is "disgusting," foul-smelling, and nothing more than that which is disposable.

The noted psychiatrist, Harry Stack Sullivan (1953), proposed that the really fascinating thing for children is not sexuality. The truly fascinating things are feces. For little children, this is warm stuff that comes out of our own bodies. It is kind of interesting. It is something that they have created. "Wow, I want to play with it." But then someone declares, "Don't touch that. Go over to that toilet and get rid of it and never look at it again. It smells horrible." So, what's discarded in the healthcare system? Are some things (and events) treated like feces? Don't touch them. Don't talk about them.

Don't talk about feces. They smell bad. So, we just ignore them, and we don't want to deal with them. Jesus had an interesting metaphor and scatological sense of humor. It's not what goes into a person, but what comes out of them. That's taboo. That's hideous. That was his joke. He really meant hateful speech. But he told it as a joke. Jesus's insights might have been offered as a joke; however, it's interesting that in healthcare, we have denigrated the end products of the gastrointestinal tract, and we've denigrated the bacteria. We turned them into enemies. Perhaps, we have also turned the organizational Gut (as a transformational subsystem) and its product (information) into an enemy that is to be dismissed or challenged.

We can add to the metaphor of the Gut operating in the healthcare system. Fee-for-service may be like Go-Lightly (a major laxative) for the healthcare system? It makes everything go faster, but that doesn't necessarily improve the health of the patient unless they need surgery and need their bowels completely evacuated. We all have had the opportunity to take a little bottle of Go Lightly or some other powerful laxative.

As residents, we joked that it really should be called Go-Heavily because that's really what happens. Fee-for-service is a Go-Heavy laxative. It makes everything turn into productivity. The product then becomes the euphemistic bowel movement. There is only the ejection of an end product rather than some improvement of the preceding process. Fee-for-service has nothing to do with the quality of the experience being transmitted rapidly through the system.

Disposable Entities

It is interesting to note that the metaphor of the Gut in healthcare systems pulls us to a focus on the primary product of the Gut, this being feces. This pull might be justified, given the importance of feces as indicators of health. There is an important thing that many primary care doctors do when engaging in well-child

checks with kids. They train their child-patient to always look at their poop. This is counter to what most people are educated to do: Don't look at your feces! The question to be asked is: How can you not look at the feces? It's going to be the thing that you most need to look at every day for the rest of your life, because it will tell you a lot about what's going on. What kid doesn't love that assignment?

This reminds Gay Teurman of sitting on a metabolic ground round of folks in the USA who are in her field:

> We had a poop expert doc. She collects and analyzes fecal matter. Before she is doing a brain scan or doing any of the questionnaires, she looks at the poop. As she declared: That which is discarded is of great value.

What we throw out defines what we keep and value. That's why so many sociologists say: "If you want to understand the values of a society, look at the garbage. Look at what is being thrown away, what is devalued, and you're going to gain more insight". Bill Bergquist offers his own observation:

> While traveling on a train from San Francisco to Sacramento, or on an East Coast train, going down the corridor through New Jersey to Washington, D.C., I love to sit by the window and look at what's at the side of the railroad tracks. The stuff that's being thrown away says so much about our society. It's the "shit" that's telling us what is non-valued and what is valued.

It seems that the output of our Gut contains valuable information, whether this information is transmitted through our Vagus Nerve or through our much less "valued" excrement.

Feces, Shame, Anxiety and Treatment

We can take our exploration of feces to an even deeper level. We've known for years that the Gut is the second brain, although there's been a lot of disconnect in terms of looking at the health of

the Gut. How do you determine the health of the Gut, and what is leaking into the system? The Gut's lining is permeable, like it might be in healthcare.

We've got a lot of things seeping into the constitutional house that we live in, and what are those things? Are they toxic? Are they good? All of this is true. Some things are serviceable, some things are helpful, and some things need to be excreted, but there's also the other component from a neurological perspective that provides important information. As our primary care doctors have concluded, this other component is our poop.

It is indeed unfortunate that we have culturally overlaid many negative features on excrement, whether it has to do with coming out the end of our colon, or coming out of our pores (sweat and other body "odors"). As a culture, we are intent on shedding and ridding ourselves of toxins; however, there's a mental health component that concerns shame. If we've got toxic innards, then how could our neurobiology not be toxic in some way? Meaning, our interpretive function is not working as it's intended to work. It seems that sweat and tears, as well as feces, are sources of shame. We are ashamed of our sweat, we're ashamed of our tears, and we're ashamed of our feces.

Perhaps negative impressions are assigned to our feces, tears and sweat because each of these vehicles for bodily elimination is associated with a deep source of shame for each of us. This source is Anxiety. We painfully know that Anxiety accompanies Sorrow. We weep because of our sorrow and often sweat because of our anxiety. What about Caroline? With all of the deaths and dissertations in her life, is she weeping through the many maladies in her life? Does she find relief by addressing her sorrow rather than (or in addition to) her maladies?

Even our feces are associated with anxiety. One of the items on the MMPI (a widely used psychological inventory) concerns whether your bowel movements are tarry. This item is included

because if you have tarry bowel movements, it's because you have sustained levels of anxiety. Feces, shame and anxiety have had a long and complex relationship.

For instances, during the 60s, it was fashionable in California to journey to the Russian River in order to participate in the colonic clinics. The clinics focused on the bowels. The goal was to be able to return to the Bay Area with a clean bowel after a weekend of selected colonics. The directors of this clinic would take a look at your stool and then devise a special program of directed enemas to give you a fresh start from a bowel perspective. Obviously, like the primary care doctors who are educating their child-patients, those attending these clinics had some appreciation for their feces or were trying to connect bowel health with overall health.

Furthermore, if you look back to 19th century, the most popular treatment were cayenne pepper enemas. You really got a "treatment" there, and it was less dangerous than all the other poisonous things doctors were giving people. For instance, it was popular for women to swallow worm parasites to keep themselves thin. So, using pathological means to cleanse the bowel was probably happening in health care, too.

Historically, it goes way back to Galen and Hippocrates. They were big fans of looking at excrement as a way of measuring health. During Elizabethan England, and at the time of royal revolutions, they had a special physician who always attended the king. Part of what they needed to do every day was look at the bowel movement. These physicians figured out the state of health of their monarch (or possibility of poisoning) based on their inspection of the bowel movement.

We are now moving forward with more sophistication about the Gut and its products; however, as just noted, it's not that the Gut has been an ignored part of health for thousands of years. It isn't that people have always ignored the Gut and its product as an indicator of health. There's a long historical and medical tradition

of paying attention to the function of the Gut. Our appreciation has been getting better during the past couple of decades. We are beginning to more clearly understand the functioning of the Gut.

If you ever have the misfortune of watching commercials in between the segments of CNN, and if you don't skip over them, there's a whole bunch of commercials now promoting healthy bowel movements on a daily basis. Women in the ads grab their stomachs and take this product. They then go out with their friends to have a nice jog in the park because they've taken an effective product that restores the balance of their bowels.

Many "true believers" accept the premise that having a healthy, regular, satisfying bowel movement is one of the keys to happiness. At some level there is awareness that digestive biology is informing neurobiology, and vice versa. We have long known that they are connected, but sometimes over the past century we have forgotten or ignored this connection. Could this relate to Dr. Bloor's own search for greater understanding of the complex processes of health and illness?

Enemas and the Health Care System

So, like Steven Bloor, we are beginning to appreciate our Gut. However, we still often treat it rather badly. We stuff it with Tums or with a probiotic. And we flush it out with an Enema. Are we just as bad in managing our organizational Gut? What might be the equivalent of an Enema in organizations—and especially in health care organizations? It might be the length of stay in a hospital. Do we try to get patients ejected out of the hospital more quickly. Is this Enema-like flushing out. Or do we just sort of pull patients out? Are we in the business of rushing people out?

Bill Bergquist reflects on his experience as it relates to the matter of admissions and discharge from hospitals. He once interned in a mental hospital that was associated with the two hospitals on which *One Flew Over the Cuckoo's Nest* was based. The finances of

his VA hospital were such that they needed to get people out of the hospital.

The administrators of this hospital needed to have a high percentage of successful treatments. So, they were pumping these men out of the hospital and sending them off to work sites. It was Oregon, so many of the existing patients went to work for very low pay at lumber processing plants, cutting the incoming tree trunks into construction-grade lumber.

When the patient population got too low at the hospital, the staff were instructed, in essence, not to heal people: "We need to retain our patients here in the VA. We need to keep them around for a while because we need the beds to be filled." It's interesting to note that that whole issue of what was to be "pooped" out of the VA hospital was based on fee for service-- much as we have identified. There was the critical matter in this mental hospital about how to declare someone "mentally healthy". This declaration was based more on the economics of the system than on anything concerning the person's Gut or Brain.

We are again focusing on the mechanics of the Gut rather than other components of the health care system. Gay Teurman has commented on referrals and communication between parts of the health system. These processes seem to be analogous to the operations of the Gut, which is very neuroactive. It is an endocrine-based, and chemically oriented part of the body. Operating like a dis-eased Gut, our contemporary healthcare system has lost its ability to communicate with itself.

Health care is filled with different, isolated proprietary electronic health records. Neither the clinician nor the patient owns their own data. The data is owned by the proprietary EHR company, whether that's Epic or Cerner. Physicians may send a patient to a health psychologist. She may try to communicate with the physician. Maybe the communique gets back into the physician's record. Maybe it doesn't. There's pseudo-protection of privacy

issues. This protection is hampering communication rather than facilitating this communication.

Beyond the Gut

There are many other levels of our healthcare system that have nothing to do with what's inside the Gut. They have nothing to do with communication done by the Gut with the rest of the second brain. For instance, there is the endocrine organ. It has microbiota. It has chemicals that come in and chemicals that go out.

This is another major piece of what we have lost in healthcare. The barriers of communication are damaging this other work that healthcare professionals and institutions need to do. They can't readily move information or coordinate healing processes between the various places and between the people who do the healing. And we would add communication with the faith community.

In contemporary healthcare, we have focused on another part of the system. We are obsessed with the mechanical utility of technology. A robotic surgeon is a super cool thing for which we're going to spend millions, if not billions of dollars. So, the surgeon can be on Mars and take your appendix out. Wouldn't that be cool? There's just a huge amount of energy that goes into that aspect of almost superhuman tech.

There is a joke told to residents. The ENT doctor can get rid of the earwax, but they'll use their laser beam to put the Mona Lisa in there—given what they're charging. They might as well be creating a work of art instead of just using a saline syringe and getting $10, like the family doctors who do the same thing. Technology is used as a part of what makes things so expensive. Because who knows how much you can charge once a robot's doing what a human used to do. Should Dr. Bloor add this concern to his growing malaise regarding the provision of medical services?

Intuition, Communication, Catharsis and the Gut

The challenge of technology brings us back to the multiple functions served by the Gut and other bodily agencies associated with the Gut. While there are many tangible functions that we have already identified regarding the Committee of the Gut, there are some less-tangible functions including intuition, communication, absorption, and protection. We conclude this chapter with brief reflections on these often-elusive functions.

Intuition and Communication

Many men tend to say: "That's what my Gut says." Whereas a woman might say: "That's my intuition." People who are in between might say either one. But there are certain ways that we trust our Gut. We believe in our Gut, and yet we're oftentimes dissociated from our Gut. We might ask what the sources are of this powerful intuitive function. These sources have to do with communication between the Gut and other parts of our body.

We lean on our Gut to tell every part of our body what is occurring. The Vagus nerve plays a critical role. This nerve is really the communication conduit to assist the peripheral nervous system or the autonomic nervous system in its regulation. This regulation, in turn, directly affects our heart (of course), our Gut (of course), and our neurobiological responses to whatever external stimuli we're exposed to. And that lies on top of epigenetics and history, and a blunt force trauma, emotional trauma. So, these central organs, the Gut and the Vagus Nerve, relating to the heart and the brain, are so important in terms of how that communication flow happens.

Their critical communication and interaction are not unlike what must optimally occur in a healthcare system. Some central hubs have to be regarded as the centers of communication. They are required if we are to consider all facets involved in someone's life.

Sometimes it's hard to get mental health to communicate with medical, and sometimes it's hard for those in mental health to get medical to communicate with them.

There are all of these highway blockages in that communication channel. This is very much like what happens as we age. The same blockages occur in the healthcare system. There are efficiencies. However, sometimes those efficiencies, such as technologies, lead to less and less efficient or less protective patient care. But who's looking at that?

Absorption and Protection

The Gut is an interface. Its job is not only to communicate, but also to protect and absorb. There's an immune system right beyond the absorptive center. The function of the Gut is maintained by the health of the milieu inside the Gut.

And what's put into the Gut is so incredibly important. The health of the Gut is determined by the diversity of the bacteria in the Gut. So, there is the critical interplay between what people put into their Gut, how it is going through the system, and the system's absorption.

There is a Salus-P3 opportunity to interact with the health of the people by reviewing what they're putting in their mouths. What are they eating, and what is the environment like in which they are living? Gut health and population health operate in very similar ways. Many people in health care may be missing that similarity.

Just to throw in a couple of facts. 90% of the serotonin in the brain comes from the Gut. Most of the dopamine is from the Gut. Most of the norepinephrine is from the Gut. It travels via the Vagus nerve, which activates the parasympathetic system. This system, in turn, slows down the heart, relaxes us, and is important in the digestion and slowing of the GI tract, making it work together. Absorption, protection, and coordination walk hand in hand.

Conclusions

In this chapter, we have ranged from the Vagus nerve to immune systems. And from feces and shame to Go Lightly and Enemas. We have considered both the nurturing of a microbiome and procedures that quickly begin a cleansing of the Gut. Over the years, clinicians have used cayenne pepper. They have used coffee. They have used all sorts of things to wrongly clean bacteria out of the Gut and decrease the bacterial count. They have wanted to start over again without realizing that real health is based on what you put into the Gut and that the Gut is doing fine without our clumsy meddling.

We now know that our Gut is modifiable and is quickly adaptive to changing conditions in its own gastro-environment. Dynamic changes and health improvement are dependent on how our Gut is treated, and the feedback that our Gut provides to our brain. We must carefully tend to that abundant garden made up of the microbiome of our Gut.

What then do we do about the insights we have gathered into the Gut as it operates in our body and metaphorically as it operates in our healthcare system? First, it is important to note that the bodily Gut and organizational Gut might not just provide an interesting bridge and metaphor.

Those who have studied complex systems identify something called Fractals, which are structures and dynamics that repeatedly operate at different levels of any system. The structure of a pine tree, for instance, is replicated in each of its branches and even in each of its needles. Complexity theorists often declare that "Mother Nature" is very efficient (or perhaps a bit "lazy"). She finds things that work in nature and replicates them again and again.

We see something like a Fractal operating in many organizations. Members of the organization become skillful in addressing certain

kinds of problems. As a result, they will create new problems that closely resemble the existing ones. These can then readily be solved. For instance, human relations departments often stir up their own human relations problems, and nurses often do a great job of creating their own internal healthcare issues. The HR folks spend time working on their own internal HR issues, while the nurses diligently seek to heal the healthcare damage done in their own department

Perhaps this is the case with the Gut. Its multiple functions in the body might be replicated in the functions provided by a Gut-like system in healthcare organizations. If one of the functions of a healthcare team is to treat their patient's dis-eased or dysfunctional Guts, then they might be producing (and then try to heal) their dysfunctional organizational Gut. Could Steven Bloor transfer his disappointment with healthcare delivery to an active role in bringing about improvement in this delivery?

At the heart of the matter is conversation and change. The matter of a dysfunctional organizational Gut, like that of a patient's dysfunctional Gut, must be addressed openly. While products of the Gut might be distasteful for some people (whether this product be feces or fee-for-service), they must be incorporated into all discussions regarding the health of a patient or the health of a healthcare system. You have to make it a conversation before you can hold on to it and expect change.

Chapter Four

Salus Perspectives, Policies and Practices

Often, nobody's looking at their Gut or their constitution based on all things, biological, mental, and neurobiological challenges. The system is clogged with information and actions that do not relate to one another. Nothing is synthesizing (digesting) this

information, coordinating these actions, or addressing the outcomes (products) of this dysfunctional system.

It seems that the Gut serves many functions and operates as both a mirror that provides information to other parts of our body and as a motor that generates the energy to drive our body. Furthermore, our Gut is both an Assimilator that converts food to energy and an accommodator that acknowledges shifts in the body's status ("gut feel"). In many ways, our Gut operates like a committee that meets diverse needs in our body and coordinates these needs.

Viewed from a systemic perspective, the Gut is not a passive organ but a self-organizing center.

We have identified six members of the committee. There are undoubtedly additional functions. However, our preliminary list should provide us with a vivid image of the many functions being served by our Gut.

Healthy biological systems require not only intake and generation, but also filtering, integration, and elimination. The Gut teaches us that survival and renewal are inseparable: you cannot grow without also clearing space.

The assimilative process of an organization's "Gut" is found in the *Culture* of the organization. The *Climate* of the organization represents the current state of the organization's Gut.

In an organizational setting, too much accommodation results in too many new entities from the outside environment to process and adjust to. We can introduce additional warriors in the organization (those fighting for the good cause). The introduction of probiotics. We may change the product or service we are delivering in the organization. However, this doesn't change the toxicity. The disease remains even with a change in the "character" of the organization. The toxic Gut remains in place. The culture remains in place even with a temporary change in

climate brought about by new leaders, changing polices, or new compensation systems.

Is our organizational Gut a central organizer? Or is this function served by our Brain? Perhaps the central organization takes place as an alliance between Gut and Brain. It is even more likely that there is no central organizer. Our body may be self-organizing.

Our integument or our intestines are actually connected to each other; however, there are no connections in our health system. It's disjointed. It would be as if part of the bowel had been resected and no one sutured it up. So, a lot of spillage happens. We can imagine people in a health care system flowing through this broken system.

It is indeed unfortunate that we have culturally overlaid many negative features on excrement, whether it has to do with coming out the end of our colon, or coming out of our pores (sweat and other body "odors"). Perhaps negative impressions are assigned to our feces, tears, and sweat because each of these vehicles for bodily elimination is associated with a deep source of shame for each of us. This source is Anxiety.

The Gut is an interface. Its job is not only to communicate, but also to protect and absorb. There's an immune system right beyond the absorptive center. The function of the Gut is maintained by the health of the milieu inside the Gut.

Section Two

A Psychological Appeal to Good Health

Chapter Five

Stress, Trauma, Allostatic Load, Social Status and Adversity

Dr. Cynthia Portman

I am one of Caroline's colleagues. I work in the same agency as Caroline and, like Caroline, have a doctorate in counselling psychology. However, unlike Caroline, I have always focused on career planning. While my own focus as a counsellor is on the positive side of life and one's career potentials, I often turn to Caroline for her insights about the less positive side of life. She knows a lot about trauma and the many stresses that impinge on the lives of many people – especially those who seek counselling and psychotherapy.

While Caroline expresses appreciation for the work I am doing as a career counsellor and often refers clients to me who are struggling with issues about their current job or future jobs, she often nudges me a bit into considering the more emotional side of the women and men I counsel. Caroline often notes that "all of us" have our own little or big stress-points. She suggests that while there are both negative and positive stressors, they all involve emotional and physiological arousal. They all must be acknowledged and "appreciated" for the lessons they are teaching us.

As a career counsellor, I am particularly interested in how stressors influence our work life. Are we less flexible on our job If we have been bombarded with negative stressors in our life. Are we more inclined to take on a major challenge in our job if we have a history of successfully coping with negative stressors or if we have been blessed with many positive stressors (such as competing successfully in a sport, or achieving high grades at a prestigious college)?

What about the community in which we grew up? If all of the adults in our neighborhood are satisfied with or confined to low-skill jobs, then are

we similarly inclined? What about a close-knit upper-middle class suburban community where all the kids were expected to attend college? Is the career trajectory higher for someone raised in this community? Sadly, the career mold for most young people is set by their family and their neighbors. Are there exceptions? Yes. And we need to give these exceptions more attention.

As I ponder these matters, Caroline reminds me that it is not just career-level that is often determined by proximal (close) factors (family and neighborhood). Levels of health are also determined by our close, intimate surroundings. It is often at this point that Caroline nudges me to consider expanding my practice to include working with clients on health-related issues. She offers to be the supportive "neighbor" who can help me expand the horizons of my own career.

Dr. Portman doesn't actually exist and is not one of Caroline's colleagues. However, her reflections are real. And the challenges she faces appear in the lives and work of many human service professionals. In this chapter we are addressing some of these challenges confronting Cynthia Portman as a counsellor and coach. We are engaging Salus-P3 by addressing the association between allostatic load and such socio-economic issues as race, ethnicity, and discrimination.

We will be looking at how all of this relates to chronic stress and many different pathologies. It was interesting to note that there were 100s of studies related to these issues. However, many of the studies were not properly conducted. One of the major review articles paired it down to 11 studies because of problems with many of the studies. The reviewers often perceived biases in many of the studies.

It seems that even with all of these studies being reviewed there was no definitive proof that allostatic load relates to any of these socio-economic factors. However, there is considerable empirical

evidence that points to a relationship between discriminatory factors and allostatic load.

Biomarkers and Allostatic Load

Following are the biomarkers included in the studies of Allostatic load. The number beside each biomarker indicates the number of studies in which it was included. Following are the Cardiovascular biomarkers: (a) Resting heart rate (mentioned in 5 studies), (b) Systolic BP (11), (c) Diastolic BP (10) (d) Resting pulse pressure (1). The Immune/Inflammation biomarkers included in the studies were: (a) CRP (11 studies), (b)Interleukin-6 (5), (c) Fibrinogen (4), (d) sE-selectin (3), (e) sICAM-1 (3) and WBC count (1)

The Metabolic biomarkers included: (a) HbA1c (8), (b) Glucose (7), (c) BMI (9), (d) Waist circumference (5), (e) Waist-to-hip ratio (5), (f) Insulin resistance (3), (g) Triglycerides (7), (h) HDL cholesterol (8), (i) LDL cholesterol (5), (j) Total cholesterol (4), (k) Ratio of total to HDL cholesterol (1). Finally, there are the Neuroendocrine biomarkers: (a) Cortisol (8), (b) CAR (2), (c) DHEA-S (6), (d) Epinephrine (6), (e) Norepinephrine (6), (f) SDRR (3), (g) RMSSD (3), (h) High frequency spectral power (3) and (i) Low frequency spectral power (3)

[Here are the abbreviations being used: BP: Blood Pressure, sE-selectin: soluble adhesion molecule E-selectin, sICAM: soluble intracellular adhesion molecule-1, WBC: white blood cell, HbA1c: glycated hemoglobin, BMI: body mass index, HDL: high-density lipoprotein, LDL: low-density lipoprotein, CAR: cortisol awakening response DHEA-S: dehydroepiandrosterone sulfate, SDRR: standard deviation of R-R (heartbeat to heartbeat) intervals, RMSSD: root mean square of successive difference.]

The implications of these biomarkers reside somewhere between family medicine and public health.

Social Economic Factors, Race and Mediating Factors

With regard to social economic factors, there was a large CDC/Kaiser study conducted in 1998. The metrics were based on ACE (Adverse childhood experiences). Physical, sexual and emotional abuse were studied, along with many other trauma-related factors. The more types of abuse that the child experienced the greater the possibility of ischemic heart disease, cancer, obesity, depression, alcoholism, and other forms of drug abuse. So, there is a relationship between allostatic load (using the ACE metrics) and health.

We are facing a greater challenge when it comes to the effect of racism on health, for it is important to acknowledge that racism isn't just a single entity that can be carefully studies. It is challenging to look through the literature on race, ethnicity and discrimination as these factors relate to allostatic load. There are few consistent results. However, several ameliorating factors do stand out—especially strong positive support. This holds true not just for people confronting discrimination, but also for people facing many other adversities.

It should not come as a surprise to find that people living with the challenges of discrimination are less likely to be burdened by high allostatic load if they have one supporting figure in their life –be it a high school coach or minister. Also, allostatic load is lower if this person knows another person who lives in a less violent neighborhood and if that person's parents provide positive support and feedback. The other ameliorating factor seemed to be education. The more education a child gets, the lower will be allostatic load.

Neighborhoods

One of the notions repeatedly brought up during several sessions of the Salus forum concerns the neighborhood islands or deserts

where there is no healthy food. People live in communities where they can't find healthy food. It is not that these people are bad or ignorant or whatever. They live on an island. They dwell in a community where any healthy food has gone somewhere else.

These islands often lack many other resources that aid in the establishment and maintenance of health. Earlier in this book, we mentioned one of these absent resources: venues for exercise. Fundamentally, we must always keep in mind that neighborhoods matter for much more than food. There is the requisite availability of recreation, safety, clean air, positive role models, and safe housing. The list extends far beyond the resources just identified.

Furthermore, residents on one of these islands typically are deprived of any support---unless there is a minister, coach or whatever. They are deprived of healthy role models and deprived of security. So, when we consider people living in settings where they can't get nutritious food, we are also considering people living in a setting where they can't find sanity. So, in some sense it is not about race, The racially based ghettos that people find themselves in provide environments of lower quality with regard to health.

Stress: Challenge and Support

Findings from the work done by Robert Sapolsky regarding stress are directly aligned with these allostatic load findings. Cynthia Portman might wish to learn a bit more about allostatic load as a way to better treat her clients. While Sapolsky doesn't directly address the issue of allostatic load and relies heavily on a homeostatic model of neurobiological functioning, he (Sapolsky, 2017) does report on extensive research showing that stress is directly affected by socioeconomic status (SES)--which, as we have noted, is a particularly strong allostatic load factor. While it is often assumed that stress is higher at lower SES levels, Sapolsky

shows that it is really much more complicated than is widely reported.

The Complexity of Stress

First, it is important to note that it can be quite stressful to remain the "alpha" in a society. Second, it is particularly stressful when one's SES is slipping. We are no longer at the top of the heap. Conversely, as Sapolsky notes, one finds a high level of positive U-Stress when moving up in the social hierarchy. It feels great getting a promotion in one's organization, but not so great when demoted to a less prestigious position in the organization.

Third, we experience stress not as a result of actual SES, but as a result of perceived SES and perceived changes in SES. The person who has been demoted from a vice presidency in the C-Suite of an organization is still making a good living and is still perceived as being high on the SES ladder. However, the demoted executive is still stressed and feels like they have dropped to the bottom of the totem pole when removed from the 15th floor office and sent down to the 3rd Floor.

Sapolsky (2017, p 141) also notes that while poverty is closely related to stress and poor health, it is actually the "feeling" of being poor that creates stress and produces poor health. It is living in a community of inequality with steep gradients of hierarchy that leaves one feeling powerless, hopeless and stressed out. Oscar Lewis's portrayal of the culture of poverty (Lewis, 1968) would seem to be directly in line with Sapolsky's observations.

Fourth, Sapolsky (2017, p. 439) identifies several intervening factors that influence one's level of stress while living on an SES totem pole. One factor concerns one's reactivity to novelty. It is not just a matter of shifting SES level; it is also a matter of adjusting to the many changes associated with this shift. We would add that shifting SES levels are often accompanied by the many shifts related to VUCA-Plus conditions.

Living in a mid-21st century society, a fair amount of tolerance for novelty is undoubtedly required if one is to stay relatively stress-free. If we are intolerant of novelty, then we are likely to be in search of a rabbit hole that we can descend to find ourselves in a wonderland of Serenity, where everything is stable, certain, simple, clear, calm, and consistent (SC²-Plus).

A second factor identified by Sapolsky concerns the "benign" nature of any threat that might be associated with a shift in SES level. Being moved to the 14th floor would probably be less stressful than being moved to the mail room. However, we must again note that it is one's perception of the threat's benign nature that creates stress. As Sapolsky often observes and as we frequently reference, it is the human's creation of imagined lions that produces stress, poor health, and ulcers (Sapolsky, 2004)

A third factor is associated with a powerful psychosocial perspective that we often reference in this book. This perspective concerns the locus of control. If another person is determining our SES or at least identifying the criteria for determining our level of SES, then we are likely to be highly stressed because control is not in our hands. Furthermore, as Craig McEwen has observed:

> Much more is the fact that the fewer resources you have, the less control you are likely to have over your life – ranging from what you to eat, to where you live. . . . Marmot's study of life spans and health of British civil servants showed gradients by rank in the civil service.

We "suffer" from an external locus of control. If a shift in SES is under our control, then the stress is likely to be lower when the shift is downward and a source of greater enjoyment (U-Stress) when the shift is upward. Control is one of the focal points for Dr. Portman when serving as a career counsellor. If her clients feel that they have chosen their career rather than having it chosen for them by parents, their society, or random circumstances, then they are likely to find this career more satisfying and successful.

The fourth factor identified by Sapolsky concerns our ability (or willingness) to discern good and bad outcomes—between upward and downward moves in SES. We might simply be enjoying life as it comes to us. We could care less about SES and not even notice upward and downward shifts. We can be a "hippy" or a martyr to some important societal cause. Winning and losing are not in our vocabulary, so we remove ourselves from stressful conditions—unlike the stressed-out citizen with high achievement needs who is sensitive to any slight or potential shift in their place on the totem pole.

There is a fifth factor. This concerns finding a social outlet when frustrated about a shift in SES or about one's inability to produce a shift. As Sapolsky notes, the outlet for some people will be aggression, often accompanied by a portrayal of other people as threatening, undeserving, or simply "nonhuman." More positive social outlets concern advocating for greater SES equality, finding a way to gain higher status in other domains (such as sports, crafts or comedy), or assisting those people who are suffering from SES-related stress. Psychologists are inclined to label this shift to other domains as "sublimation." Cynthia Portland uses the lyrical term "career arabesque" when encouraging her clients to make this adaptive move.

Balancing Stress and Support

When identifying all of the relevant stress factors—nutrition, environment, healthy behaviors, racism— and when considering Sapolsky's many dimensions of stress, we must also consider the balance between stress and psychological support. Cynthia Portman is aware of this interweaving of stress and support. Caroline is encouraging her to see how health is impacted by this interweaving.

Many different support factors contribute to the stress load that society imposes on us. However, one of the factors that comes to mind is the lack of support due to the rarity of intact family

structures with good role models of both genders, and the establishment of value systems and work ethics. The impact of loss regarding something as basic as family structure is a real contributor to the inability of the community to provide support and help people cope with the stressors they find in their life.

The reality is that our environment is becoming more stressful. We can reduce my stress by refusing to watch the news or deleting all of the political emails and text messages we get every day. That is stressful for some of us. As Perry Pugno reveals:

> I get pissed off every time I get a text message to vote for some person: "Let's stop the demise of our democracy by this evil person running for office." You don't know what is real. These are just stressful words. The effort necessary to verify and validate facts and find out where is the right path (if one exists these days) is extraordinarily stressful.

The support environment is incredibly important. The loss of family structure and loss of family getting together is particularly troubling. That kind of social interaction is missing. Kids are getting their social interaction online. This does not contribute positively to coping with stress. This is something to which we don't give sufficient credence.

It is interesting to note that the coach or pastor can be a substitute. Part of the role played by the supportive older person is a bit of a substitute for the absence of a father or mother. Or the role of grandparent. The involvement of grandparents with families is important. This is another opportunity for role models and the contribution of wisdom, context and perspectives. We have been aware for years that a majority of people who attend church are older women. However, the most rapidly growing population of churchgoers are young men. That is a major sociological trend change. Maybe that is an indicator of young men looking for any support—even if it is going to church!

Mark Vukalcic reflects on the role of church as a source of support:

> Much of this increase in church attendance might be found in the Evangelical churches. The evangelical movement has gained a lot of traction with youth. Kids are getting interested in church-related music. Music can get you into the door. Then I think it is the community that takes over. The music, at least for the Evangelicals, is getting kids in the door. The importance of community comes with that.
>
> Although this attraction to Evangelical churches has been slipping of late, the attraction is much greater as compared to the appeal of the Catholic Church to youth. The attendance for youth at Catholic churches has been falling off dramatically since the 1950s and early 1960s.

In the past, it was the urban Catholic Church that was so much the source of support for families. You had immigrants who looked to the Catholic Church not just for music but also for education and many other human services. These support services have not been replicated in recent years. In some Northeastern states, for instance, there are Catholic communities that are made up of those French-Canadians who came down from Canada to find work in the United States. In Maine, for instance, there are large cathedrals that at one point served as the life support for these French-speaking immigrant families.

However, this support in urban areas has really gone away. As church-attendance has dropped off in these urban communities, it is likely that the social support offered by churches (especially the Catholic Church) has also dropped off. There are fewer donation funds to support various programs. It would be wonderful if a large percentage of the population was to re-embrace the attitude of caring—providing support for those living in their community. It would be a trend reversal that would do a lot of good for a lot of people.

Unfortunately, we are up against a trend of isolation. There is a group of five or six people. And they are all on their phones. Texting someone else. They are not even looking at one another. It is quite sad. In terms of mentorships (especially in the Black community), they only exist if you have a lot of athletic skills. You might find a mentor who is a surrogate father figure if you are gifted athletically. However, this is only a fraction of that cohort that has that talent. More often, it is the street that offers opportunity. Are you going to work for 8 dollars an hour or are you going to be a drug dealer? Even if you are more fortunate, both parents have to be working day and night to put food on the table. A lot of support under those circumstances is hard to come by.

Allostatic Load, Offload and Hardiness

We have a sense that allostatic load does exist. While we are unlikely to have a sense ourselves that we have too high an allostatic load, we do know the things that load us. So, we are looking for a metric that can measure that load. It is hard to see how racism could not be a part of that load. Fortunately, there is an offset of allostatic load. You don't need much to offload some of that allostatic load that takes you on a course that ruins your health, that makes life seem so miserable. It takes a couple of people investing in your life that can make the difference. That is encouraging.

Perry Pugno offers his reflections on this matter, introducing the concept of hardiness:

> I came across something recently that suggests we have been working a long time in developing metrics regarding how stressed we are. The death of a parent, that kind of stuff. But I came up with something thirty years ago that was called a Hardiness Index. It was sort of the opposite of Stress inventories. People who scored high on this Hardiness Index coped with stress much better

> than us regular folks. Those administering the Hardiness Index made the point that there are people who actually thrive on something that would be terribly stressful for the rest of us. These are people like court attorneys who like to argue in court. They tend to have, as a population, very high Hardiness Index scores.

Perry has identified attorneys who are wonderfully healthy while they are beating up folks. Craig McEwen provides a qualifier to Perry's observation:

> [The stress that Perry is mentioning] is positive or tolerable stress that focuses someone and prompts high performance. But it goes away once out of the courtroom, whereas toxic stress is unrelenting.

Bill Bergquist mentions an insightful study that was done which compares the health and longevity of orchestra conductors with the health and longevity of members of the orchestra. The researchers found that the conductor lived much longer than the orchestra members. They have fewer health problems than members of the orchestra.

Control and Covenant

This matter of health and hardiness found among some people had to do with locus of control. As in the case of the attorneys, the conductors have considerable control over the score, interpretations, etc.—while members of the orchestra are just sitting there saying "how do we work with the next conductor for whom we are going to play?" They can fight back—there is the Montreal Symphony where members of the orchestra got their demanding conductor fired. But it is rare.

The relationship between stress and control is important. Robeert Sapolsky talks a lot about this relationship. The amount of control you have –perceived or actual—relates directly to the matter of health. We suspect that scores on the Hardiness Index are

correlated with (related to) the Locus of Control measures. We also suspect that Cynthia Portman might find Hardiness to be correlated with wise career moves over which her clients have had considerable control. Given that correlations do not indicate the direction of causality, we are left pondering whether hardiness precedes internal control or results from this orientation toward life and career.

Control

Mark Vukalcic has noted that the loss of control is pervasive:

> A survey was conducted thirty years ago that used a measure like the Hardiness Index. The most rewarding careers –most self-fulfilling careers—were those careers where people had the most control. At the very top of the list were luthiers who make musical instruments. They completely control their environment. I have known as a musician a half dozen luthiers and they are absolutely committed to their profession.
>
> The first seven to ten years of their life are a struggle. They have invested so much in all of this lath and wood that they feel like they have to proceed. They go through a real down period, and they fail many times. But those that make it through this seven to ten year window have complete control over their life. They are artists. They are in demand. It is a word-of-mouth kind of a deal. And the ones that I have known are the most mellow, calm people I have known. Once you get a reputation, you get to sell an instrument for ten thousand dollars. But that first ten years or so is a stress sandwich that they are young enough to withstand.

We would suspect that fairly early in the 20th Century being a physician would have been gratifying, because you had a fair amount of control. The matter of control relates to something known as the "shattered covenant," which is experienced by

physicians (Cassatly and Bergquist, 2011). Many physicians went into the field assuming that they were going to have control. They were going to have some authority. People were going to respect them.

However, increasingly, as the physician lost that control, their covenant was shattered. It's like the people who make the lutes. You were willing to go through hell in medical school, during your residency, and during your early career because the assumption was that after you went through all of that demanding ritual and accompanying abuse, you were going to have a good life where you are respected, have a lot of control, whatever. Now, we see that this is no longer the case. The issue of depression, alcoholism, etc., for physicians is present. How much Hardiness is there for those who are physicians?

Tain't as Good Any More

A recent online essay concerned the things that have changed during the past two decades for the worse. Things like the amount of cream in the middle of Oreo cookies were identified. A whole lot of things just aren't as good as they used to be. One of them is the sense that healthcare professionals were once responding to a calling rather than looking for a well-paying job. This sense of calling is no longer prevalent.

Mark offered his own personal narrative regarding the absence of something:

> One of my earliest memories was of a first or second grade friend called Paul. I went to his birthday party. I was from a lower-middle-class family. I never thought of social class. You know you were fine if you had food, clothing, and shelter. But I went to his birthday party, It was the first time I ever saw someone who lived in a home with a backyard that was as big as a park with forest and everything like that. I hung around with him every day when I was young. And then one day he said that he was

> going to move to Philadelphia. And I asked: "Why?" He said: "My dad got a better job." Even as a five-year-old, it didn't compute. Was money and job that important? Who was in control? So, early on in my life, I wondered about control.

He further reflects on the matter of control:

> I remember when I grew up and was a math teacher in an inter-city school where I had little control. I was mostly a disciplinarian. One of the forces that drove me to medicine was that I would be able to somewhat control my work environment. Of course, that has changed. I was fortunate enough to have considerable control during most of my career.
>
> However, I remember when managed care came into our hospital where I worked for many years. A prevalent joke concerned managed care and limitations in time to meet with a patient. A hospital administrator dies and meets St. Peter at the Gate to heaven. St. Peter says, "I have good news for you. You made it. You are admitted." Then there is this pause. "You are admitted for three days." That was the running joke, because we were really upset about control. We were told which lab tests we could order or not order. We needed a special chit from Sacramento to get a certain drug order for certain patients. The entrance of managed care was a real shocker.

A further important point can be made about control. As we are growing older, the idea of control has taken on a different meaning. Mitch Applegate offers his insights about the shift in control:

> If we are talking about spiritual principles, or depth psychology issues, the idea that I still have quite a bit of control is based on the assumption that I have control over what I attend to. What I attend to is very important.

> Furthermore, I can always choose my response. I find that my stress varies tremendously. When I am paying attention and am aware that I am paying attention, my stress level goes down. I can choose how I see the situation. I can change my expectations. I can change the parameters by which I look at a situation. And then I can change my response.
>
> What's interesting now is that I can choose an internal response that is commensurate with that assessment, even though my job as a physician is different from what it was many years ago. There are more internal mechanisms for finding Peace, for finding whatever it is when we are in control. That might be where mentoring comes in. It is important to have people who are able to shift their internal milieu. They have a different way of seeing or being regarding whatever is happening out there, where there is really a lack of control in a social sense. This is something that is developing in my own personal purview, more and more.

We can return to Peter Sterling's notions about expectations.

Expectations and Neighborhoods

Sterling identifies the extent to which our body reacts to our expectations rather than to reality. This leads, in turn, to an internal locus of control. If the expectation is that I can take some action that will influence the outcome, then we might find Hardiness. If I expect that whatever I do will not make any difference, then I won't be hardy. Bill Bergquist offers his personal reflections on this matter:

> I lived for many years in California. The notion of somehow influencing anything in the State of California was absurd. Now I live in a small town in Maine. This town has the old traditions of town hall meetings. We actually have a yearly meeting where we vote in person

> on the budget of our town. You stand up and indicate that you support a particular item or don't support it, and indicate the reasons for your support or non-support. You stand up and speak. My wife, Kathleen, is a strong advocate for specific issues. She stands up during the town hall meeting and declares "I don't like this!" I do like this!" I guess I'm not in California anymore.
>
> When I lived in Walnut Creek, California about five blocks from John Muir Hospital [where Jeremy Fish and Mitch Applegate work], the idea of my influencing what was going on in Walnut Creek would have been absurd. At the time, there was massive development going on in Walnut Creek—but I would have had absolutely no influence.
>
> So, I was thinking about the stress that comes with political affairs--when you know that you don't have a single thing to say about what is happening. This is very powerful. It might be one of the reasons why someone brings a gun and tries to shoot someone. They believe that the only way they can influence what is happening is by killing the bad person.

Perry Pugno offers his own reflections regarding influence and control:

> I had that same experience, having grown up in California for many years. I then moved to a small town in Ohio and to a small town in Kansas. Just being in that environment felt like a weight had been lifted off my shoulders. It just felt so much more peaceful whenever I was there—even before we moved there. So, I resonate, Bill, with what you have said. When I visit my kids in California, I feel like I have gone to visit the asylum.

Mark Vukalcic chimes in:

I'm going to defend living in California. I will grant you that small-town life can be less stressful. After working in an urban hospital in Chicago, I moved to a suburb of Detroit, which was a pretty small town. But I think that you can still make an impact in your community. It is just that you have to think on a small level. For instance, I do Meals on Wheels. That's my contribution. I was on an eight-member board at a local high school. I was able to host fundraisers for the music programs that had been gutted over the past forty years.

So, when they say that all politics is local, it is important to remember that California politics can be just overwhelming. As you said, you feel like you're visiting an asylum. I agree that if you were just to walk into a mall or any public setting, it is just sensory overload—as opposed to small town calm. However, I still believe that I can make an impact –but it is on a very small scale. It is like trying to straitjacket that small-town feel into a problem that seems manageable. Like funding for music programs at a particular school. So, that's how I survive in California.

It should be noted that Mark has neighborhoods when he was growing up in Chicago. For many years, the neighborhoods in many American cities often centered on the Catholic Cathedral. Within the neighborhoods you could influence what was happening—because essentially the older cities all over the world were actually clusters of neighborhoods. That is no longer the case. Places like Los Angeles lost that. San Francisco still has some neighborhoods – at least until recently. San Francisco clearly is kind of falling apart and no longer has the support system.

So, are there times when a California physician can help their patients get ahold of themselves and get ahold of what is happening in their life? Can these physicians help their patients find something, as Mark mentioned, that is purposeful and

meaningful for them? As a physician, are you allowed to do that kind of life planning, or is that outside the purview of John Muir physicians?

Excitement and Flow

As a John Muir physician, Mitch Applegate responds to the question regarding the role he can play:

> Yesterday, I finished six days of teaching. I recognize that my role has changed. My role now is a little bit more that of a mentor. I realize that when I am mentoring, I am sitting down with the residents and am talking about these broader issues. I seem a lot smarter. Part of it is because I am engaging in what David Brooks talks about in his book, *Strength-to-Strength*. I am enjoying that immensely. Another piece is passing on wisdom that is based on the many, many errors I have made.
>
> I am now talking to patients about all of the things that are happening in their lives. They've had a heart attack, a stroke, lost a foot, or are starting dialysis. All of these things are happening in their lives. They are kind of captive in that hospital room. Right. I throw out the statement: "There is a cure for this." And they look at me funny. "You don't have to have another heart attack. There is probably a way that prevents that from recurring."
>
> We have taken some immediate procedures that have saved your life; but there is more that can be done. They get serious and ask me more questions the next day. And that is when I start talking about lifestyle management. And it feels good. Maybe because I am in California, patients are very open to these ideas when I approach them that way. It triggers their curiosity. And then they indicate that their wife does that, or their cousin does that.

> Then I give them the literature that shows reversal of these things—with diet, exercise, and sleep. And connection.

For Mitch, excitement and gratification is to be found in his work.

Allostatic Load and Excitement

The allostatic load and stress associated with the challenges Mitch is facing are not debilitating for him.

> It is kind of exciting that I am getting to do these things. I have a clinic where I get to do follow-ups. It's a start. For me, it is very energizing. I feel like I'm starting to get to what I wanted to do when I was working in critical care for a long time. People came out of critical care all weak and depressed. I'm not sure we did them a favor.
>
> It is now an interesting time to switch the discussion. However, the food deserts that we have been talking about require that we help people make difficult lifestyle decisions. How can we make things better when they live in places where it is not safe to walk? Where you don't have healthy foods. But I still think it can be done. So, there is hope. And John Muir allows me to do that work.

Mitch has found control in specific settings. Is he "hardy"? Or maybe the issue is that "hardiness" itself is an elusive concept that might lead us astray from what is actually occurring. Craig McEwen shares his own reservations:

> I don't like this notion of hardiness. It reeks of resilience as an individual trait. And these examples simply describe normal stress that people encounter in doing hard things, but that goes away when they are done. This is so different from toxic stress and its biological effects.

It seems that the identification and analysis of positive features in the character of individuals is not easy. As Craig has noted, it

might be just a matter of people doing their job or enjoying their life. We don't need to award them a medal for simply being adaptive human beings who are successfully addressing their everyday challenges.

On the other hand, we don't want to take strong, positive characteristics for granted. They are just as important to study as those characteristics associated with negative motivations, such as greed, and negative behaviors, such as violence.

Positive Psychology and Hardiness

In the field of psychology, there has been a real revolution, involving Martin Seligmann, Mihaly Csikszentmihalyi, and others. A wonderful article was published in the *American Psychologist* in the year 2000 (which supposedly was the first year of the new century). In this lead article, Seligman and Csikszentmihalyi noted that during the 20th Century psychologists focused on neurosis. We focused on anxiety. We focused on depression. During the 21st Century, what if we began to investigate the role played by purpose? What if we began to focus on the role played by Hope? What if we began to look at relationships that nurture?

So, it is interesting that the topic of allostatic load and stress have been matched by concern for positive factors. Mitch addressed the comparable change that is occurring in medicine. What if physicians talked about purpose with their patients rather than (or in addition to) talking about diabetes? What if physicians talked about locus of control and changing expectations? This is what you are all describing. Psychologists have identified this as *Positive Psychology*. What would "positive medicine" look like? Perry talks about the Hardiness Index as opposed to the Life Stress Inventory. These are all important points.

Perry Pugno speaks up about Mitch's perspective:

> I love the concept of using your clinical encounter time to try to help people generate hope and look forward (identifying their resources in the current environment). However, that's hard to do during a six-minute visit when the patient is having trouble even accessing enough of their medications to keep hypertension under control. We have some significant challenges. There was a time in our health care history when your primary care encounter could include expressing concern about "what is really bothering you?" What's causing this anxiety, high blood pressure, and all of that kind of stuff? That's hard to come by these days. The time isn't there because payers won't pay for it. The employers say: "well you can't waste time doing nonremunerative functions."

Bill Bergquist shares his own story about encountering a physician who (eventually) offered hope:

> I remember a meeting with my physician here in Maine. A few years ago, I had an appointment with her as an 80-year-old patient. We were going through all of the test results about the high this and high that. 2.0 that and more. At one point, I stopped and asked her: "Am I doing an OK job? Am I healthy?" She stopped and smiled. "My God, you are very healthy! You are going to live a long life!" What a difference this made. It allowed me to listen to the rest of the data. To have a physician that I trust say, "There is a good chance that you are going to live a long life. So, take care of your damned body!"
>
> My physician didn't have to say that, but the reframing was very powerful. So, Mitch, I wish to hell that you also were my physician. The kind of focus that you have is wonderful. My physician now asks about many things in my life. My writing. How am I doing, having retired from my job as president of a graduate school? She is beginning to ask new questions—I think it is in part because she and

> I are both growing older. So, Mitch, I think that she is changing in a way that is similar to what you are talking about. She is changing how she operates as a family doc.

In the olden days when physicians had paper medical records, some used to write little notes on the edges of the page. "Got new puppy." Things like that important stuff. They talked about stuff with their patient that made them feel a little better or may uncover an issue. "I hear that your mother-in-law moved in with you. How is that going? Things like that.

Physicians used to be able to do that when the pace was a little different. That's now more difficult to come by. They now fill the prescription, give you the new immunization, and shoot you out the door. "If you feel you need to learn something about this [drug] then go to the drug store and they will give you brochures about all the dangerous things associated with medicine you are taking." It is such a different environment.

Conclusions

Mark Vukalcic offers some closing comments concerning the matter of control and hardiness:

> I have a real appreciation for my father who, as a coach, said "when the going gets tough the tough get going. "Basically, you can't control what happens to you. But you can control your response to what is happening." That is how I shake off depression so that it doesn't last more than 12 or 24 hours. I have to just pick myself up. This dovetails with an attitude of gratitude. At the larger level, we have been talking about church attendance or for me meals-on-wheels. A sense of community. A longing. A sense of caring is very powerful. These are important to keep in mind, as we try to sort out all of these metrics, which can be overwhelming.

It is a matter of community buffering stress, flow transforming challenge, and caring practices taking center stage in the work done by Salus-oriented healthcare professionals. As Criag McEwen has declared: "resilience is collective."

Chapter Five

Salus Perspectives, Policies and Practices

It should not come as a surprise to find that people living with the challenges of discrimination are less likely to be burdened by high allostatic load if they have one supporting figure in their life –be it a high school coach or minister.

The person who has been demoted from a vice presidency in the C-Suite of an organization is still making a good living and is still perceived as being high on the SES ladder. However, the demoted executive is still stressed and feels like they have dropped to the bottom of the totem pole when removed from the 15th floor office and sent down to the 3rd Floor.

If another person is determining our SES or at least identifying the criteria for determining our level of SES then we are likely to be highly stressed because control is not in our hands. We "suffer" from an external locus of control. If a shift in SES is under our control, then the stress is likely to be lower when the shift is downward. And a source of greater enjoyment (U-Stress) when the shift is upward.

Unfortunately, we are up against a trend of isolation. There is a group of five or six people, and they are all on their phones. Texting someone else. They are not even looking at one another. It is quite sad.

You were willing to go through hell in medical school, during your residency, and during your early career because the assumption was that after you went through all of that

demanding ritual and accompanying abuse, you were going to have a good life where you are respected, have a lot of control, whatever. Now, we see that this is no longer the case. The issue of depression, alcoholism, etc., for physicians is present. How much Hardiness is there for those who are physicians?

If the expectation is that I can take some action that will influence the outcome, then we might find Hardiness. If I expect that whatever I do will not make any difference, then I won't be hardy.

What if physicians talked about purpose with their patients rather than (or in addition to) talking about diabetes? What if physicians talked about locus of control and changing expectations? Psychologists have identified this as *Positive Psychology*. What would "positive medicine" look like?

Basically, you can't control what happens to you. However, many of us can control our response to what is happening. However, many people can control neither what happens to them nor how to respond. And allostatic load can be high as a result. Those of us with resources are more likely to control both what happens to us and how we respond.

Chapter Six

From Homeostasis to Polystasis

Dr. Cynthia Portman

In recent years, I have obtained a certificate as a life coach. While I agree with Caroline that our body has a major impact on the way we view and act in the world, I am also reminded that we have a brain and that this brain can sometimes "trick" our body into feeling good or feeling bad. So, I concentrate on our brain and how we make decisions about our life and our career.

One of the important points of attention for me in my work as a career counsellor and life coach concerns the assumptions my clients make about the world in which they expect to live in the coming years. Some of my clients are absolute optimists. They expect their world to be benevolent and supportive of their endeavors, whatever they might be. While they anticipate some challenges, these optimists expect that these are meant as venues for new learning.

Conversely, I counsel some pessimistic clients (though they tend not to seek out counselling) who believe the world they are about to face is plotting against them. It is a world filled with barriers and unexcepted bombs. For these men and women, the primary way to prepare for one's future is defensive in nature. This means finding a safe job (even if it is not very gratifying) and building a life at home that is stable and fortified (big saving account, modest lifestyle, small family).

The remarkable thing is that someone like Caroline should be a pessimist, given her life experiences. Yet, she is often a risk-taker and dreamer of bigger and better things in her life. She might get kicked in her relationship with men, yet she stills is willing to date. Caroline might be disappointed in the medications she is taking and medical services she is receiving, yet, she keeps trying out new medical treatment, new drugs, and the latest life-style changes. In short, Caroline is resilient. She is the

kind of person I love working with in my counselling practice. And she is a great, collaborative colleague.

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The matter of mind-body interaction is now at the forefront of health care deliberations. Anticipation is a key factor in one's determination of health-based choices in life. We were fortunate to engage in dialogue during one of our Salus Forum sessions with Peter Sterling, as a leading (and sometimes controversial) neurobiologist who had much to say regarding the interacting mind and body during this session.

While Peter Sterling, as a neurobiologist, has focused on the body's use of neurotransmitters, hormones, and other signaling mechanisms, we can expand his analysis by looking at the function of stasis in all human systems. Not to distort Sterling's important description and analysis of the allostatic processes operating in the human body, we are introducing a new term: *Polystasis* (Bergquist, 2026). We are using his word to designate the multiple functions engaged by complex human systems in addressing the issue of stasis. As Peter Sterling has noted, it is not simply a matter of returning to an established baseline of functioning (stasis) when considering how actions get planned and taken in a human system.

Feedback and Polystasis

Early in the history of the cognitive revolution and aligned with the field of cybernetics (feedback theory), three prominent researchers and scholars from different disciplines came together to formulate a model for describing human planning and behavior. George Miller, Eugene Galanter, and Karl Pribram (1960) prepared *Plans and the Structure of Behavior,* that described the dynamic way in which we are guided by a reiterative process of acting, testing, modifying, and re-engaging our behavior. They presented a T.O.T.E. (test-operate-test-exit) process repeatedly engaged as we navigate our world.

As with T.O.T.E, Polystasis blends the concept of Statics (stabilizing structures) with that of Dynamics (adaptive processes). Operating in human systems, we are guided by certain core outcomes that do not readily change (static processes); however, we must also be open to modifying these guiding outcomes as our environment changes. As Sterling has proposed, the static notion of homeostasis is inaccurate—especially when applied in our VUCA-Plus environment. We might find homeostasis in a wonderland of Serenity; however, residency in this wonderland requires that we forego any access to a real world.

Appraisal

The Polystasis model incorporates three processes. First, there is Appraisal. Then there is Adjustment. And finally there is Action.

In the appraisal stage, as Peter Sterling has noted, there is an ongoing need to monitor the environment in which we operate to determine if a new baseline (desired outcomes) is required. We informally or formally predict the probability that our current desired baseline of functioning can be achieved. Is it even desirable? At this point, we introduce a concept offered by another neuroscientist, Antonio Damasio (2005).

Damasio proposed that a somatic template continually provides information regarding our bodily state. Perhaps, this template plays a central role in Sterling's Allostatic process. Similarly, there might be a set of psychosocial templates that we frequently reference when making polystatic predictions and adjustments. These templates offer a view of our psychological status and the status of our external world (especially our social relationships).

A psychosocial template might trigger our attention when something is threatening us. Is it a thought or emotion inside our Head and Heart? Or is it an externally based threat? As Richard Lazarus noted many years ago (Lazarus and Folkman, 1984), threat appraisal is complex and involves a multistage process.

Elsewhere. We have suggested that three threat categories operate in our Amygdala (Bergquist, 2011).

These categories are derived from the semantic differential of Charles Osgood (1957). Is this threatening entity not interested in our welfare (bad)? Is it strong (rather than weak and ineffective)? Is this threatening operating in an immediate active manner (rather than inactive or threatening at a temporal or special distance)? Our Amygdala is triggered, leading to an immediate change in our somatic template. This soon leads to a change in our psychosocial template as we better understand (correctly or incorrectly) the nature and scope of the threat. As Robert Sapolsky (2004) notes, we then engage fight, flight, or (more often) freeze in response to the real or imagined threat.

Alternatively, the psychosocial template is triggered when something a bit "different" occurs in our psyche or in the world where we dwell. The "new" template doesn't match the template that existed a few minutes before, or with some relatively stable baseline template we have built during our lifetime. It is a "deviant" template that draws our attention and impacts our polystatic process. Sometimes called a schema (Young, Klosko, and Weishaar, 2006), the more stable template concerns our view of how other people see us and how much control we have over external forces impinging on us. Michael Polanyi (2009) might propose that we lack full awareness of this template. We have only tacit (rather than explicit/conscious) knowledge of this psychosocial template—or the somatic template identified by Damasio.

While the Amygdala-based appraisal will trigger survival behavior, the deviance-based appraisal is likely to trigger further exploration and even a growing appreciation of that which is different. For instance, the unexpected soaring upward of a pitch in a musical composition may portray love and aspiration. Just as the plunging downward of a pitch might powerfully portray despair. Similarly, we are drawn to a painting that in some way

"deviates" from what we would usually expect, much as a compelling photograph offers an unaccustomed viewpoint. Even humor often requires that we be caught off guard by the final turn of the story.

The motivational hierarchy offered by Abraham Maslow (2014) provides us with a way to understand the general appraisal made by human beings. We can expand on this understanding by introducing the dynamic appraisals operating in both the world of Allostasis and Somatic templates and the world of Polystasis and Psychosocial templates. These templates and dynamic appraisals best describe the source of ongoing moment-by-moment adjustments in human behavior.

At the immediate (proximal) level, our appraisals are dictated neither by the long-term (distal) search for fulfillment of a Maslow need, nor by the simplistic stimulus-response process offered by early behavioral psychologists (such as Clark Hull and B. F. Skinner). The model of immediate, proximal appraisal that I have proposed fits much more closely with that offered by Miller, Galanter, and Pribram. We are constantly altering our Appraisal (Test) of the current state based on information derived from our somatic and psychosocial templates.

Adjust and Act

We adjust if the current baseline of desired functioning is no longer appropriate. As Sterling proposes, we identify a new level of functioning. An alternative ("allo") stasis is based on predictions regarding the probability of success in achieving this baseline (stasis). Miller, Galanter, and Pribram propose that we are Operating (Adjusting) when we establish a new stasis.

We Act on behalf of the new baseline of desired functioning. In keeping with Miller, Galanter, and Pribram, we again Test (appraise) to see if the adjusted level is still appropriate given ongoing environmental changes and our experience of acting on

behalf of the new stasis. T.O. T. E. and dynamic feedback systems are alive and well in the Polystatic world.

Under homeostasis, daily adjustments are made via what I would identify as first-order change (Argyris, 2001). They require first-order learning, which is usually based on habitual ways of thinking. Such a model of stasis might effectively operate in a highly stable world. However, our world might be operating in a rugged and perhaps even moving (dancing) landscape that looks nothing like a flat, stable plain (Miller and Page, 2007).

There is no return to a previous state. Rather, as Sterling proposes, adjustments are made based on what we predict will be the next setting of this dancing environment. They require shifts in the interpretation of environmental meaning and anticipation of specific environmental challenges. These shifts, in turn, require second-order learning and second-order change (Argyris, 2001).

Living Polystasis

All of this may seem mechanistic and abstract (an occasional critique of Miller, Galanter, and Pribram's T.O.T.E. model). However, Polystasis comes alive when we recognize that this recursive process moves quickly. It is often not amenable to the slow thinking described by Daniel Kahneman (Kahneman, 2013) nor to the reflective practice of Don Schön (1983). Cynthia Portman finds that she must try slowing things down with her life coaching clients as they react passionately to the challenges in their lives. In her work, Cynthia is helping her life coaching clients identify and alter the habitual ways in which they respond to impinging events in their life. While she has never heard of Polystasis, Cynthia is fully aware that one must be agile in dancing with life events. Skillful dancing resides at the heart of her coaching practice, much as career arabesque was one of the most impactful concepts she offered her career clients.

Polystasis comes alive not only for Cynthia but also for all of us when we apply it to our real-life situations. Bill Bergquist made the following observation during one of the Salus forums:

> My blood pressure doesn't return to "normal" even when I quite imagining lions that don't exist or defeat lions that do exist. I am anticipating other lions (real or imagined) and I wonder about what impact this latest lion has had on my health and my state of mind. I am stressed about being stressed. I suspect this also occurs with other people in my life.

A new "normal" is quite fluid--for we continue to appraise, adjust, and act (moving through the hostile environment of the Savannah). Polystatic processes are essential to our survival in this anxiety-ridden environment. Dynamic feedback based on T.O.T.E. is alive and well in this hostile environment. We are also alive and well—thanks to polystatic processes.

Thermostats and Chairs

We next offer an example of Polystasis by returning to the classic homeostatic example of thermostatic regulation:

> I must live in a comfortable environment. I address this matter by adjusting the thermostat if I anticipate the window remaining open to provide some ventilation. However, I can make an even more immediate adjustment. I can choose to put on or take off my sweater. I can change chairs. These actions enable me to sit further away from the window.
>
> Even more immediately and intimately, my body will adjust based on what it predicts I will do to accommodate the temperature change. I know that the thermostat is a slow and often secondary Polystatic player. The homeostatic adjustments of the thermostat will often arrive late. They are not very effective when compared

with the act of adding or removing the next layer of clothes or moving to another chair.

What about our production of finely crafted chairs? There is the more distant ("distal") solution. Just as we may have to change the thermostat in our home, a decision might be made to train someone else to build the high-priced chairs. We do this if we are uncertain about the long-term health condition of our master craftsman. However, our polystatic adjustments are much more immediate (proximal). They are based on immediate predictions regarding what is taking place on our production floor:

> As the production manager, I immediately predict that something has to change when my master craftsman calls in sick. I set new (temporary) standards and priorities regarding what we will produce today. We'll increase production of the cheaper chairs. Predicting the future (distal planning) I will inform our marketing person that we need to push the sales of these cheaper chairs (at least for a short duration).
>
> At an even more proximal level, my mind will be predicting that my body's stress level is about to increase. I will be activating the sympathetic level for a short duration until I get things "arranged" and "adjusted" for the coming production day. I will also spend some time reflecting on what is likely to be the longer-term health status of my senior craftsman. I can overthink and over-worry (inventing lions) or be realistic (assessing the presence of real lions).
>
> How I approach this task of planning for my craftsman's absence will have a major impact on how I manage my body and production staff. That which is Essential (the financial viability of this company and the quality of the finished product) will provide important guidance and stability (statics) as adjustments are being made and

remade at all levels (dynamics) under the conditions of Polystasis.

The key point is that the baseline itself is likely to repeatedly change when Polystasis is operating in a shifting (dancing) environment with changing somatic and psychosocial templates constantly at play. This change might involve quantity (raising or lowering the baseline) or quality (shifting to a different baseline). We remain vigilant regarding real and imagined lions.

Somatic and Psychosocial Templates

Our templates are fully available to us—even if we remain unaware of their powerful presence. We weigh the costs and benefits of changing environmental conditions (such as an open window in Winter). Our priorities are considered. Do we want fresh air, or do we want to reduce the cost of heating in our home? We determine that reduced costs are essential. As a result, we not only keep the window closed but also reduce the thermostat to 66 degrees and put on a sweater. At another level, Cynthia Portman asks her clients to weigh the priorities in their life. Which priorities have been assigned to them? And which have they chosen? Have some priorities shifted in recent years? If so, why have they shifted? And how have they shifted?

Our body (somatic template) predicts and anticipates the changes. Adjustments are made that enable us to live in a cooler environment. The baseline has changed. A new level of homeostasis might be established with a change in the thermostat, but this is a secondary adjustment. Settings on the thermostat will (or may) remain in place until the Spring, while the clothes we wear and the windows that we open will make a bigger, more immediate difference. We can do a better job of meeting our goal of reducing heating costs by wearing a sweater or closing the window than by moving the thermostat up a notch.

We alter our ways of adjusting to (and buffering) the impact of shifting conditions (as noted by our deviant psychosocial

template). Our craftsman reports in sick. We can do nothing and hope for the quick recovery of our craftsman. Perhaps we recommend that he visit a doctor or consume some chicken soup. We might wishfully anticipate his rapid recovery or the healing power of chicken soup. Our errant prediction, in this case, might put us in jeopardy of making wrong decisions and failing to adjust production schedules or change production priorities.

Peter Sterling's Allostasis tells us that we can predict and plan immediate (proximal) changes in our company's schedule and priorities. We can anticipate a need to meet financial quotas by altering our promotion of chairs in a specific price range. We remain keenly aware of what is occurring on the production line (Test). We change our production plans if this is necessary (Operate), see if this alteration is working (Test), and then turn our attention away from the production live (Exit). We have scheduled a meeting with the head of marketing regarding potential changes in promotional priorities.

Under Cynthia's guidance, we become more thoughtful about our priorities. In many cases, we will move self-chosen priorities higher on our list. We will also examine our current and anticipated environment to identify how changes in this environment might have an impact on our life priorities. Because Cynthia has now broadened her work from career counselling to life coaching, she now encourages her clients to consider how non-work-related forces impact their career. And with a little nudging from Caroline, Dr. Portman is also inviting her client to consider the impact on their health. She is "arabesque-ing" a bit toward Salus-P3.

Leadership and Polystasis

If we turn our attention to leadership in an organizational system, we find that there is much we can do and must do about predictions at both the proximal and distal levels. At the short-term (proximal) level, stress-management techniques and

production shifts that we have already mentioned can be engaged. At the longer-term (distal) level of prediction, we anticipate what might happen in our world –such as our craftsman being sick again. As the owner of a small business, we must be prepared for many possibilities. To remain "stuck" with one homeostatic standard is to lose the agility required of someone who owns a business.

At the same time, we must be cautious about becoming "trigger-happy." We must avoid being afraid of lions that aren't present. Furthermore, each major change in the baseline brings about a challenging change curve (Bergquist, 2014). A major change can impact both the level and quality of production and service rendered. Those working on the production line might not be skillful (or motivated) when pumping out cheap chairs. They might themselves be oriented to slower, fine craft work. The change curve can also damage morale among those working in the organization. Those on the line might resent having to "sell their soul" (and their craft) on behalf of the bottom line (producing cheaply made chairs).

A financial downturn in society might require me, as one of Cynthia Portman's clients, to adjust my aspirations regarding early retirement. What will this alteration do to my health and to the performance of my current job? Will I be "selling my soul" if I remain "glued" to my current job because I don't yet have enough money set aside for retirement? Hopefully, Cynthia can help me address these issues, though I'm not sure if she is trained to address these "soulful" issues. Perhaps I need to work with a psychotherapist or a priest.

There is also the matter of self-fulfilling prophecies. We must be sure that our anticipations are not self-fulfilling. Our master craftsman becomes sick again because of stress associated with making up for lost time when returning to work, or because he fears being replaced by a craftsman who doesn't get sick. I become less productive at work precisely because I am worried about

remaining at a job I no longer enjoy. I don't enjoy the job partially because I am no longer good at doing it, and I am no longer good at doing it because I don't enjoy it. Self-fulfilling prophecy rules my domain of work.

Reparation

We mention one specific condition of Polystasis that is relevant as a difficult societal issue facing us in the United States. This has to do with the policy of *Reparation.* American policymakers are faced with the challenge of determining if it is appropriate to provide certain citizens with compensation for their lost wages as a result of gender, racial, or ethnic discrimination.

What about the loss of income for their ancestors who served without pay as slaves? How does one determine the appropriate restoration of that which has been Essential for a specific group of people who have experienced long-standing discrimination and/or physical violence? The baseline will be shifting as we begin reflecting on the appropriate restoration. Hope increases, or it is squashed during these deliberations. More is anticipated, or less is expected, about financial reparations or the offering of apologies.

How ultimately do we assign value to loss of hope or loss of dignity? This is a matter to be addressed by someone who must continue to work in an unfulfilling job. What payment is due for the deferment or discarding of life priorities? What is the cost of ongoing physical abuse? Is it illness and even premature death? The answer(s) to these difficult questions reside(s) in assigning meaning and value to specific environmental conditions, both past and present. This meaning and value will shift from moment to moment and from one constituency to another. Nothing restores the homeostasis of a discriminatory society, especially if this homeostasis involves returning to a previous mode of repression. Cynthia Portman has some sense of how this powerful

polystatic process works and sees it manifest in her work as a life coach.

Adjusting Anticipations and Costs

The environment must (and will) continually shift. Anticipations will change repeatedly as potential solutions are proposed. The meaning will be reconstructed multiple times as each constituency seeks to understand and perhaps appreciate the perspectives offered by other constituencies. Different values will emerge and gain ascendance as different constituencies are brought to the table. Baselines are constantly shifting. Predictions are frequently modified. Potential actions are proposed and abandoned with the shifts in baselines and predictions. Polystasis will prevail.

Before leaving this focus on Polystasis, we wish to reiterate that this rapidly moving process often comes at a cost. As mentioned, when introducing Polystasis, the quick engagement of appraisal, adjustment, and action is not amenable to slow thinking--not to reflective practice. Our somatic and psychosocial templates are frequently adjusted in ways that might not align with reality. Imaginary lions are a specialty of modern humankind. Polystasis is aligned with noncritical, knee-jerk reactions.

Polystasis and Heuristics

Don Schön (1983) has cautioned us about these reactions. Schön is likely to reintroduce his teaching of urban planning courses at M.I.T. He would undoubtedly suggest that planning in this domain will inevitably require Polystatic processes. As is the case with reparations, urban planning inevitably involves changing baselines, altered predictions, and complex action plans. An urban landscape is inevitably rugged and dancing. The psychosocial templates associated with urban planning are often raw and misguided, especially when urban politics are involved.

Daniel Kahneman (2011) would join Schön in urging restraint. Fast thinking should be avoided when operating in a dynamic polystatic manner. Kahneman may suggest that Polystasis and the formulation of psychosocial templates are vulnerable to the inappropriate uses of heuristics. We often use simplistic and outmoded heuristics when shifting our template, changing our baseline, and making predictions in a dynamic environment.

Recency, Habit and Primacy

We might, for instance, apply a Recency heuristic. Adjustments are the same as the last time we faced this environmental shift. We put on a sweater the last time we felt a chill. We took specific action the last time we lost an indispensable worker (our accountant). We can take the same action regarding our absent craftsman.

Polystatic adjustments can become habitual. A heuristic of Habit is applied. We always slip on a sweater at this time of day (imagining that the temperature in our room will change). We indiscriminately apply the same employment policy regardless of the employee being considered. As Cynthia Portman points out to her clients, we engage the same coping mechanisms (denial, distortion, etc.) regardless of the lion we are facing.

Then there is the matter of Primacy. The first action taken when facing a challenge remains with us. We messed up the first time and learned to avoid this situation at all costs. This is still the case. We never recovered from the chill when opening the window last week. We will keep it closed until the summer. We will never forget that this employee got sick at a critical moment. We can never rely on him in the future.

Adjustments and Caution

Given this potential vulnerability of recency, habit, and primacy, we must ask: How do we adjust to a new or changing baseline? Adjustments will operate differently when we face a critical

challenge and when motivations (and anxiety) are high. We are inclined to think very fast and be especially noncritical when the stakes are high. Emotions are intense. Furthermore, we might always imagine a threat when we are tired or distracted—we indeed become "trigger-happy." Anxiety becomes a common experience. Retreat and isolation become common polystatic actions.

Kahneman's fast-thinking heuristic might even be the easy labeling of people with different skin tones—especially those from a different socioeconomic level or culture. We immediately view these people as different. They become the "Other" (Oshry, 2018; Weitz and Bergquist, 2024). Our proximal environment becomes threatening when we encounter a person with darker skin or someone speaking with an accent. We rapidly and uncritically predict trouble. We imagine a dark-skinned lion or a lion from another continent. The baseline changes as we shift into survival mode. We take action to avoid or eliminate this person.

All of this means that we need to be careful about the assumptions we are making and the heuristics we are applying under specific conditions. These are conditions that involve Essential matters or that hold the potential of being threatening. It is in these conditions and at these moments that we must be particularly vigilant and reflective.

We must ask ourselves: is this situation really like the last one? Can we do a better job this time in coping with this challenging situation? If this is truly important, then perhaps we should get some assistance. We might have to open up to differing points of view. Is this genuinely threatening or are we only imagining that it is threatening? In short, Polystasis might be an essential Salus adaptation given our shifting VUCA-Plus environment. However, this process can also lead us astray. We can easily be lured down the rabbit hole into a much more comfortable world of Serenity (SC^2-Plus). We must indeed be vigilant and reflective.

Polystatic Load

Just as there is allostatic load, there is a load associated with Polystasis. We believe Salus perspectives, policies, and practice are rooted in multi-causative, multi-perspective, multi-pathway integration within a framework of polystatic load. This load includes a vast array of toxic influences that accumulate across our lifespan to eventually push us toward chronic debilitating conditions like Diabetes, High Blood Pressure, Heart Disease, Dementia, autoimmune disorders, Mental and Behavioral Health ailments, and Cancer. Polystatic Load incorporates a wide net of toxic influences that slowly disrupt our biological pathways and tilt our minds and bodies toward illness, despair and even premature death.

Polystatic Load =. Environmental Toxins + Genetic Pre-Dispositions + Social Toxins + Psychological Toxins + Family Toxins + Childhood Traumas + Food Toxins + Beverage Toxins + Cultural Toxins + Religious Toxins

Individually, toxins will usually cause temporary disruptions in our biological life pathways, such as the function of our mitochondria, our liver, our heart, our kidneys, etc. Chronic, polystatic toxins over decades begin to accumulate health pollutants—excess byproducts of toxic metabolic disruptions—into our arteries, intestines, liver, heart, mind, and muscles. Caroline is fully and painfully aware of this compounding. She is trying to convince Cyntia Portman that she should also be more sensitive in her work to this compounding toxic load.

One familiar polystatic toxic pollutant byproduct is the maladaptive healing process that lays cholesterol plaques into our heart's blood supply, the coronary arteries, referred to in its advanced stages as "coronary artery disease." The Biomedical Model labels LDL as "bad cholesterol" (the single causative agent of coronary artery disease) and a single curative medicine is developed to halt that pathway—called Statins.

Yet, in reality, we know that there are many risk factors for coronary artery disease—such as diabetes, high blood pressure, smoking tobacco, sedentary lifestyle, obesity, and chronic kidney disease. They all point to an important point: Coronary Artery Disease is by no means a single disease with a single cause and a single biological target for cure. It is, in fact, a product of unrecognized Polystatic Load that has been accumulating across many biological pathways over decades, manifesting in the eventual damage to the heart's blood supply and risking sudden death.

The Salus-P3 approach requires turning the clock back to childhood, when we begin to accumulate toxic influences in our lives. The average 5-year-old child historically has mostly healthy habits. This child sleeps well, eats mostly healthy foods, gets regular exercise (called "play"), stimulates their mind through school and learning, and avoids most of the perilous ingestible toxins of Alcohol and Tobacco. Some 5-year-olds, however, will have accumulated toxic experiences from family, friends, social status, poverty, and other vitally important influences on eventual health outcomes.

Shifting our Polystatic Load lens to every single 5-year-old child in America and doing a deep dive into "health risk accumulation" at that age would provide us a vitally important window into how to make small changes with the 5-year-old to expand the likelihood they will live a very full health span for decades to come. Yet the Biomedical Model was based on the focus being only after Diseases have manifested. Which means the population group least attended to in healthcare is that composed of children from about age 5 to early adulthood.

That is when routine vaccinations take a break, and the primary reason to be seen by a physician is for acute infections, acute injuries, and pre-sports physicals for school activities…which means the window for greatest potential impact on health span is when people are least likely to engage with the healthcare system.

By age 25, we have lost half of our healthy habits and have begun to accumulate unhealthy habits like smoking, drinking unhealthy beverages, eating ultra-processed foods, doing illicit drugs, sitting all day, amping up our work stress and responsibilities, sleeping poorly, etc.

When embracing Salus-P3, we take a keen interest in our youth. These years have long been neglected by the traditional Biomedical health approach. This approach overlays a 30-year timeframe for long-term influence and impact on health span. Our 30-year lens can also be placed within the context of a 50-year-old, a 70-year-old, or even an 80-year-old. Yet its capacity to alter outcomes diminishes the longer we wait to engage. Most recent research indicates those living past 100 often avoided major illnesses until well beyond the average person—often decades later. Their extraordinary lifespan is grounded in remarkable health spans that cross the often-perilous years of 50-70 when major conditions like cancer, heart disease, stroke, and lung disease vanquish the average person.

Shifting from a short-term single-cause, single-disease, single-cure to a long-term multi-cause, multi-condition, multi-modal treatment perspective will not be easy for any of us. Certainly, Caroline can assist in helping us embrace this perspective. Cynthia Portlman might be on her way toward this Salus-P3 realization. It is human nature to want simple, rapid benefits—which, unfortunately, can only come when we face sudden, predictable, treatable conditions like a heart attack, stroke, diabetes, kidney failure, and the like.

Salus-P3 requires in-depth exploration through assessing multiple sources of stress (Polystatic Load) on our mind and body. It requires building an accumulative risk assessment that crosses many professional domains. Salus-P3 requires a collaborative, self-organizing healthcare team to navigate toward an extended health span and reduction in overall Polystatic Load. Polystatic Load is neither a disease, a disorder, a condition, nor an illness. It

is a broad label connecting dozens of sources of toxic stress on our minds and bodies—it provides an integrating way to consider health that an individual can begin to self-assess.

Conclusions

We wish to expand on the concept of Allostatic Load, just as we expanded on the concept of Allostasis by introducing Polystasis. We introduce the term *Polystatic Index*. It represents a combination of *Load and Lift*. We believe it is important for practitioners such as Caroline and Cynthia Portman to begin measuring the burden of Allostatic Load across individuals and populations, as well as the benefit of Community Lift across individuals and populations.

Salus-P3 leads us to measuring what matters most to all of us—becoming a stronger, healthier America. We can't move Population Health metrics without establishing meaningful Population Health metrics that can be understood by all Americans.

An example of this operating in the United States is recent work around Adverse Childhood Experiences—originally published by CDC and Kaiser, looking at 17,000 Health Maintenance Organization members in Southern California (https://www.cdc.gov/violenceprevention/aces/about.html)

This landmark study described the link between high levels of Adverse Childhood Experiences in this population and later serious health conditions like heart disease, stroke, cancer, suicide, etc. Those involved in this study also developed a 10-point ACE Test that can be used to discover, on a collective basis, lifetime risks of many diseases for individuals and populations.

The shortcoming of this remarkable new measure was that it doesn't take into account any positive community (or family) factors that can LIFT a child away from the many diseases linked to high ACE scores. What about a child with a high level 6 ACE score who is now 50, flourishing, and free of the many illnesses

described in this landmark article? What happened to that child that LIFTED him or her away from the despair and diseases awaiting him or her without intervention?

As we have noted, most social science evidence indicates the single most positive, lifting impact on youth is having at least 1 nurturing relationship that can sustain a child through nearly any external event or experience, including high ACE events. The absence of LIFTING factors limits the ability of this important new ACE test to be broadly utilized.

The report's overfocus on negative features can also make it highly challenging to work with current children. They are forced to reveal sometimes shameful realities of their home life with their parents or things about their parents. This includes drug use or criminal records that might lead health professionals to report the family to Child Protective Services. Rather than supporting the family unit through sometimes devastating events, the dysfunctional parents contribute to the polystatic load.

We believe a Polystatic Index, combining Allostatic Load with Community Lift, can begin to recognize remarkable family and community resilience that can nurture a healthy child through very unhealthy situations. The Polystatic Index contrasts with community-based health indexes such as Healthy Places Index (California: https://www.healthyplacesindex.org/) that assess risks based solely on place of residence.

The Polystatic Index, once developed fully, can provide direct information to the person, their family, and community resources, as well as healthcare clinicians. They can begin to assess real challenges to long-term health and provide potential Community Lift approaches that have proven beneficial for overcoming trauma, stress, and other factors in Allostatic Load.

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Chapter Six

Salus Perspectives, Policies and Practices

We are introducing a new term: *Polystasis*. We use this word to designate multiple functions engaged by complex human systems in addressing the issue of stasis. It is not simply a matter of returning to an established baseline of functioning (stasis) when considering how actions get planned and taken in a human system.

Operating in human systems, we are guided by certain core outcomes that do not readily change (statics); however, we must also be open to modifying these guiding outcomes as our environment changes. As Sterling has proposed, the static notion of homeostasis is inaccurate—especially when applied in our VUCA-Plus environment.

A psychosocial template might trigger our attention when something is threatening us. Is it a thought or emotion inside our Head and Heart? Or is it an externally based threat?

The psychosocial template is triggered when something a bit "different" occurs in our psyche or in the world where we dwell. The "new" template doesn't match the template that existed a few minutes before or with some relatively stable baseline template we have built during our lifetime.

Adjustments are made based on what we predict will be the next setting of this dancing environment. They require shifts in the interpretation of environmental meaning and anticipation of specific environmental challenges.

The baseline itself is likely to repeatedly change when Polystasis is operating in a shifting (dancing) environment with changing

somatic and psychosocial templates constantly at play. This change might involve quantity (raising or lowering the baseline) or quality (shifting to a different baseline). We remain vigilant regarding real and imagined lions.

We must be cautious about becoming "trigger-happy." We must avoid being afraid of lions that aren't present. Furthermore, each major change in the baseline brings about a challenging change curve. A major change can impact both the level and quality of production and service rendered.

Fast thinking should be avoided when operating in a dynamic polystatic manner. Polystasis and the formulation of psychosocial templates are vulnerable to the inappropriate uses of heuristics. We often use simplistic and outmoded heuristics when shifting our template, changing our baseline, and making predictions in a dynamic environment.

Our proximal environment becomes threatening when we encounter a person with darker skin or someone speaking with an accent. We rapidly and uncritically predict trouble. We imagine a dark-skinned lion or a lion from another continent. The baseline changes as we shift into survival mode. We take action to avoid or eliminate this person.

Just as there is allostatic load, there is a load associated with Polystasis. Salus perspectives, policies and practices are rooted in multi-causative, multi-perspective, multi-pathway integration within a framework of polystatic load. A Polystatic Index would include a vast array of toxic influences that accumulate across our lifespan. These toxic influences eventually push us toward chronic debilitating conditions like Diabetes, High Blood Pressure, Heart Disease, Dementia, autoimmune disorders, Mental and Behavioral Health ailments, and Cancer.

Coronary Artery Disease is by no means a single disease with a single cause and a single biological target for cure. It is, in fact, a product of unrecognized Polystatic Load, which has been

accumulating across many biological pathways over decades, manifesting in the eventual damage to the heart's blood supply and risking sudden death.

By age 25, we have lost half of our healthy habits and have begun to accumulate unhealthy habits like smoking, drinking unhealthy beverages, eating ultra-processed foods, doing illicit drugs, sitting all day, amping up our work stress and responsibilities, sleeping poorly, etc.

Shifting from a short-term single-cause, single-disease, single-cure to a long-term multi-cause, multi-condition, multi-modal treatment perspective will not be easy for any of us. It is human nature to want simple, rapid benefits—which, unfortunately, can only come when we face sudden, predictable, treatable conditions like a heart attack, stroke, diabetes, kidney failure, and the like.

Genetic predisposition and our behaviors are the largest contributors to premature death, followed by social drivers of poor health (housing, poverty, etc.), then environmental contributors, and, coming in last place, our Health Care eco-system.

The *Polystatic Index* represents a combination of *Load and Lift*. We believe it is important to begin measuring the burden of Allostatic Load across individuals and populations as well as the benefit of Community Lift across individuals and populations. Salus perspectives, policies, and practices lead us to measuring what matters most to all of us—becoming a stronger, healthier America.

Chapter Seven

From Reality to Artificial Intelligence (AI)

Dr. Cynthia Portman

While I am fully supportive of technological innovations and often focus in my career counselling on potential careers in the future that are dependent on new technologies, I have serious reservations about artificial intelligence (AI). Not only might it take away careers in the near future, it also is meddling with the human mind (my area of work). I believe that we homo sapiens have and should have free will in making decisions. I worry that AI will take away this capacity – and human responsibility.

I worry that AI will replace career counselling. Folks will simply plug into some computerized system, talk about their life aspirations, take a few digitalized tests, answer some questions about their educational and career accomplishments to date and then sit back waiting for a reassuring (though artificial) voice or animated figure to tell them what to do with their life. Perhaps, AI will be even more sophisticated and will be interacting with the career client. Still, I don't think this is as good as a "live" person, who can be empathetic and attentive (using bodily cues along with words).

On the other hand, I am intrigued with and perhaps even eager to try out the AI capacity to assemble and summarize a vast amount of information. I could use assistance in scoring and bringing together the information I have gathered from my initial interview with a counselling client, as well as the tests and checklists I have given them. Perhaps I could also administer a couple of personality tests, thus enabling AI to

suggest ways in which I might best approach this client during my coaching sessions.

So maybe AI isn't all that bad. However, I am still a bit fearful and cautious. Do I need to consider my own career change?

———————————

Scott Sandland, our guest speaker at one of our Salus Healthcare Forums, brings up an issue that resides at the heart of contemporary discussions within the healthcare community and throughout all domains of mid-21st-century life. This issue is Artificial Intelligence (AI). This powerful technological tool not only holds the potential of impacting the way in which healthcare is delivered, but also inevitably impacts the way in which we engage in polystatic processes.

Scott notes that a major part of his career has been working with people under 30 who are in treatment or immediately post-treatment and aftercare. However, eight years ago, he was running a mental health clinic as the executive director. He was just running into scaling issues regarding talent. These issues concerned the normal stuff: unmotivated or burned-out staff. Scott wanted to look at a scalable upstream solution to the problems that he was running into. And he wanted to get more onto the prevention side—and at scale. That led him to technology.

He ended up getting a couple of patents awarded in AI for empathy systems. What he really saw was the sort of zigzag opportunity where everyone's trying to make robots increasingly accurate. Scott was listening to AI experts at the time. They talked about what they wanted at the time. It was all about chatbots. They wanted these chatbots to be increasingly accurate and to offer specific responses. What Scott heard was a whole bunch of really smart people with Asperger's talking about how to make sure all the robots act like really smart people with Asperger's. This was not effective communication.

His brother-in-law has got Asperger's. Scott reported:

> He's a great guy. He's a great uncle. And every once in a while, you just go, Uncle Nate, no one wants to hear about telescopes anymore. Like we're fine. That's enough. That's all the detail we're going to need this week. These are wonderful, loving, good people. However, complete, thorough, accurate information is not the same thing as effective communication. If we're talking about how to build effective communication, we need to think about what effective communication really is. There is considerable misunderstanding in this regard. AI and machine learning experts were wrong. Their misunderstanding ties directly into our conversation.

Scott identified a problem that relates to this misunderstanding. The problem is loneliness.

Loneliness, Addiction, and Empathy

We have a massive loneliness epidemic in this country—as well as throughout this planet. South Korea is going to spend a couple of billion dollars on loneliness maintenance per year, starting next year. China's going to follow. America is in third place. We are the loneliest non-Asian country on the planet. The impact? Scott provided some basic statistics.

73% of millennials report feeling lonely and desperate. 70% of teens feel excluded when using social media. if you were 40 years old or younger and male during COVID, you are more likely to die from suicide than from respiratory complications. Critically, it is important to report that the second leading cause of death for people under 25 in America is suicide.

That statistic about suicide was a big one for Scott. He recounts:

> I ended up going to the United Nations and got in trouble there. I was giving a talk on AI for global good at the UN global good conference. I said, who gives a damn if the

> trees and the whales are fine if all the kids are killing themselves on purpose! We should prioritize the epidemic of suicide.
>
> What does it mean if members of the most educated population in history are killing themselves at a rate that we've never seen? It comes down to something very fundamental. It's a very simple mistake we've made with computer systems. We thought social media was going to make us feel social. We thought the internet was going to connect us. And we thought the exchange of ideas was going to democratize everything.
>
> All the things that we have seen recently suggest that this is not the case. What we have are echo chambers. We have silos and we have people feeling more and more disconnected from one another than ever before. And social media is making that worse. There are many studies that we all have referenced. We know that these studies support what I have said. I don't think that it is controversial to say that the last one and a half technological revolutions have made everything worse.

Now we're in the midst of a technological revolution that they are promising will be more impactful and revolutionary than the creation of the internet. This revolution can be of great value—and can help us address the issue of loneliness.

The AI Revolution: Addiction and Empathy

Scott proposed that AI is really going to be able to do remarkable things. If we say that the last one and a half revolutions really screwed us up, then we must ask: What lessons are we learning that apply to AI? What can we do about it?

Algorithms and Addiction: All those other systems, call them Facebook, Instagram, TikTok, The List, YouTube, whatever. They all created algorithms, learning systems that just kept paying

attention and optimizing for time on site—because that's obviously directly connected to money for them. Time is money. They wanted to get people to stay on their sites. And that's just what they told the algorithms to do. Make site visitors stay. Let's figure out how to make them stay.

In the process, we accidentally trained a whole bunch of algorithms to optimize dopamine production. And that dopamine production created a whole bunch of slot machines that are shaped like phones and computers. There's a great book called *Addiction by Design*. This book is about video poker and video slot machines that were built around the idea of dopamine. These machines make us feel the lack of dopamine and drive usage. That is what we have in all these tools.

TikTok is probably the most impressive algorithm of any of them. TikTok is incredible. So is the fact that a Chinese company has an algorithm that's designed to be emotionally and psychologically manipulative. The algorithm is pointed at the brain stems of our entire millennial and under generation. This is really scary. And the data support that addiction is occurring. AI systems already are accidentally moving in that direction because that's the data they're trained on.

AI and Empathy: The reason Scott built his company is to design an AI system that is empathetic and pro-social. The idea is simply this: We are pack animals and social apes. And the thing that defines humans is effective communication. Deer have antlers, peacocks have feathers, rams have those big old horns, and on and on. Humans have words. And we engage in robust, complex communication. That is the thing that makes us run this planet. And we love it.

And now we have something that Scott calls ChatGPT. Chat GPT can talk. It starts feeling very social. It offers messages that are very saccharine, empty, and shallow. They are tricking enough people to create widespread dependency. There is a growing

population of young people in the world (including America) who are having increasingly intimate conversations with AI systems.

And they are foregoing healthy relationships to pursue these conversations. You can just imagine a 14-year-old boy who is socially awkward and bullied at school, choosing an AI that just says: "No, Jeremy, you're the best. And no, you don't have to learn social skills or be polite or take your turn or be a good teenage boy. You can be a selfish, gross, misogynistic, awful person—whatever. And I [this AI bot] will love you for it and encourage whatever you feel like [because I'm optimizing for time on site]."

So, we need to figure out how to build AI systems that encourage oxytocin, not dopamine. That means tools that help us understand each other better. How to respect each other better. We need tools that encourage the pursuit of a pack and not encourage isolation. We need to move in the opposite direction from the isolation that we are seeing grow greater all around us.

Scott offers another insightful narrative:

> My nephew is a senior in college. He and his roommate don't talk much. They game a lot, and they talk to people on headsets a lot. He's on the e-sports team at his university. Which means he's getting a small partial scholarship for playing video games--just like those who play football, basketball, whatever. And he's good at it. And it's good for him.
>
> My nephew finds a lot of joy in playing these games. He's on a team. And they talk about team-related stuff. However, they're all in a room in the dark with blue light blasting their face—while the sun is setting and getting darker and darker in the outside world. They're just sitting there alone. And they don't realize they're lonely until they press the power button. Then they're just sitting

there. You may wonder why they press the power button to turn it back on. It makes a whole lot more sense.

The name of Scott's company is Cyrano, based on Cyrano de Bergerac.

Cyrano, Love, and Oxytocin

Scott built Cyrano to do what Cyrano de Bergerac did:

> Like Cyrano, I'm going to tell you what to say so that the other person will fall in love with you. That is what we built. We designed a system that can get a psychographic profile of a person. And once we have that profile, we can say: here's how that person's going to prioritize, show up, react, respond in a whole bunch of different scenarios. We are informing a human on how to be a better partner, better friend, better colleague—even a better physician. Better communication can take place.

At this point, Scott directs his attention to healthcare:

> Deeper connection and intimacy can take place as it relates to healthcare. Treatment plan adherence goes up, understanding the patient's condition better goes up. Empathy goes up. All that leads to better patient outcomes.
>
> We can achieve positive outcomes in many other sectors—not just health care. Whether we're talking about sales or marriage and everywhere in between, we are building systems that encourage someone to say, "I understand you more now because of this. I see you. I hear you. I want to step into this with you." That's the game that we need to be building.

Scott is suggesting that we need to build algorithms that optimize for oxytocin. We need to build algorithms for improved relationships. Scott is acquainted with a former student who

became a great therapist. His thing is the 20-second hug. He is encouraging everyone to give 20-second hugs because it's the cheapest, fastest, easiest way to get oxytocin that he can come up with. We need systems that are thinking that way.

The Good and Bad of AI

Scott has introduced the concept of empathic and compassionate AI. He envisions an empathy-inducing and oxytocin-releasing AI tool. While Scott offered some of the optimism that is inherent in the thoughtful use of Artificial Intelligence, it is also important to identify some of the less beneficial effects of AI. We must address some of the concerns and fears expressed by Cynthia Portland. First, AI provides harmful pathways for dopamine juicing algorithms that were designed to make our eyeballs stay on websites as long as possible. That has inadvertently made us all addicted in some fashion to looking at webpages and clicking things.

Scott has introduced oxytocin as a benefit, while dopamine can be a cost. Oxytocin is a bonding hormone of the posterior pituitary. Scott foresees this oxytocin-releasing AI Tool as almost an empathy assistant or a communication assistant. It improves the ability of the receiver to ask the kinds of questions of the other person that provides a deeper understanding of them, at which point the relationship deepens. The deepening of the relationship can take place. Even if it is by means of a virtual medium that stimulates oxytocin and deeper bonding, rather than producing an addictive kind of clicking.

On the other side, we have dopamine, which is often linked to addiction of many kinds. It is also related to the culture of substitution that we introduced earlier in this book when addressing the challenge of high fructose corn syrup. We can readily substitute one addiction for another—and AI can assist this substitution. As human beings, we try to substitute what nature does. We find ourselves with sugars that are saccharin.

This substitution operates much like AI messages. We can use the language of sugar substitutes, which, over time, is likely to be more harmful than actual sugar.

There is another way to envision the addictive power of AI and its substitute role. We can consider the positive and negative feedback loops that operate in all systems. Addictions operate in those parts of a system in which there are just positive loops. In real life—real interactions—there are both positive and negative loops. Positive loops are self-reinforcing.

For instance, the following comment might be made: "This is enough with me talking about myself. Why don't you say some things about me?" The following positive feedback issue might be present: "I want to share my pain with you, and then ask you to suggest how I might best address my pain." Negative loops are self-correcting, such as the following comment: "This is enough already, my attending to you. Why don't you spend some time worrying about me!" Or the issue is: "I've been nice to you long enough. Let me ask some hard questions."

The statements are usually not as direct as this, but the point is made. The conversation must change direction. There are negative loops built in that allow for some reciprocity and adjustments in relationships. We suspect part of the challenge for AI is building in a dynamic process involving both positive and negative feedback loops. How do you design a system of interaction that's complex enough for it to contain both the positive and negative loops? So that it doesn't operate like another addictive process—with its own form of dopamine.

Relationships: Fracking, Faking, and Augmentation

What's happening with the systems right now is much less like building a relationship and much more like fracking. We are strip-mining people's attention. Fracking works by putting a pipe in the ground. You shoot some substrate down the pipe. It pushes things up. And you collect them. That is what we're doing to get people's

attention. We are just trying to frack. We are not trying to go back and forth. In fracking, you're just pumping something down to the substrate. And that's what we're doing in the virtual world right now. We're pumping down to the substrate in people. We will inundate you with stimulation and entertainment or validation--or just that artificial sweetener: "you're doing great, you're right, you're doing great, you're right."

There was a trend going on with Reddit where your ChatGPT would indicate which fictional or real-life character your ChatGPT thinks you are most like—based on what the ChatGPT knows about you and based on the conversations you've had. And ChatGPT didn't say bad things to people. 20% of people got called Elon Musk or Iron Man. And the ChatGBT users were like: "You're a genius. You're so smart and creative." So, all these people were like someone great. "Am I the one who's most like Iron Man?"

It wasn't until the Internet users all started posting their descriptions that they realized the robot didn't care. It was all a routine. But it felt really good. They all felt really validated by the machine they'd been talking to, and from which they received compliments. The fake compliment feels almost as good as a real one, especially to somebody who needs it. The facade is convincing—and increasingly convincing. The filters make you look prettier or more handsome than you really are. These filters can be so convincing that the defining characteristic of smartphones now concerns how good they are at faking reality, "so no one has to see how much you actually suck!" The fact that we buy a specific smartphone for that reason is terrifying.

A key question becomes: How would an AI system avoid producing that fake reality? The reciprocity of authentic interpersonal relationships means that you would have people actually helping AI feel better about itself. So, you would end up having someone say something absurd. Like: "You're the best AI

I've seen. My God, you're wonderful." Or: "Can you bring me back to your inventor? I think I'm in love with your inventor!"

The answer to this question doesn't concern reciprocity, for we want to use AI not as a replacement, but as an augmentation. We want AI to be an exoskeleton for the actual relationships we hope to have: "I need it to be an exoskeleton for me to be a better father, husband, friend, neighbor, whatever." Our AI system should say:

> Hey, remember, you're gonna go talk to your neighbor, Dennis. Dennis is Myers-Briggs ENTJ." "On DISC, he's a C, therefore, here's what you need to know. Forget the labels, forget the jargon. Do this, not that. When they [Cs] start talking about these things, that's how they show they care."

Or:

> We know you hate details. You're an ENFP. But this guy's an INPJ, [or an ISTJ]. So, he's going to be detail-oriented and very boring to you. This is how he shows he cares. Understand that he's not calling you stupid. He's respecting you. And understanding that motive and understanding require a love language. And strategically, never interrupt this person.

Cynthia Portman would like AI to be an exoskeleton for improved working relationships with her career clients.

AI as a Soft Skills Consultant and Trainer

As a physician working in a healthcare system, Caroline or Cynthia might rely on their AI system to offer them some reminders about the complex relationships they must navigate:

> Strategically, when you're working with this colleague of yours, always introduce everybody (including patients) by name, not by role, because your colleague cares about the people, not the job. Or the inverse of that, et cetera.

Scott suggests that this is what his Cyrano system literally does:

> We have a psychographic profile regarding every one of the people in the system we are serving. And we can map them in a very complicated graph. Then we will use, basically, a GPS to navigate from one person to another person and how to meet somewhere in the middle for each person. So, building that GPS for conversations is the game, because we've all gotten so good at transmission.
>
> And all of these technologies are no longer all about tweeting out, or how many followers, or how many of all these things. Rather, technologies should be about how I can transmit and be a better center of attention. So, we need technological tools to help us learn how to listen, how to work with an audience, how to understand, and how to empathize actively and intentionally with other people. In some ways, we are offering a virtual coaching process.

This system could be particularly relevant for physician leaders who have to deal with difficult fellow physicians. How do we deal with that type of challenging relationship? Do we do some coaching in small groups regarding how to deal with these challenges? Just as participants in the small group can be of assistance in helping the physician leader work with a challenging colleague, AI can assist some people get better and more effective in their work with other human beings. A company like Cyrano can be said to offer Soft Skills services.

Using AI, you're meeting in the middle, teaching human service workers like Caroline and Cynthia. Or you are telling physician leaders how to understand people who have very different perceptions or very different ways of processing information. It's almost like just-in-time teaching. It is one thing to go through a Myers-Briggs workshop and to read about personality types. It is quite another thing to literally focus on a specific relationship,

with AI coming in and actually saying, "Now remember this concept. It is relevant to this person".

AI as Training Wheels

What about those human services workers or physicians who are Luddites when it comes to new technology? How does a human being who's using this AI coaching and this information actually learn something? Can you ever put in a profile that is not correct? For instance, Jeremy is profiled as an ISTJ—but he's not really an ISTJ. So, the human learns how to manage unexpected comebacks in real time. It seems that even if people have a propensity towards a particular behavior, sometimes they surprise you.

Our patients do this all the time. We think we have them figured out. Then they come in one day, and they're sick or stoned or happy. Or they exhibit some other unexpected behavior. The entropy of life did something to them. They come to our office and behave completely differently. So, rather than replacing one's existing insights about relationships, how does an AI system provide education so that the human becomes better at building and rebuilding the relationship? Rather than just using AI as a crutch?

This is a critically important issue. AI needs to be the training wheels. AI oversimplified. It helps you so you can better relate to other people. It's nice that AI can provide an augmentation. It can help you be even better when you use it. Specifically, we should have the Luddites concerns in mind. Scott puts it this way:

> The context becomes very important as we have built and organized our system and created our output. We take into consideration the time-commitment level. The advice being delivered is very much aligned with motivational interviewing. We provide established stuff but take into account their commitment level. Their level is here. Their desire level is here. They are being logical at this level or not, et cetera. So, our advice operates in very real time.

> And then we are strategically combining this with permanent quotes--sort of a long-term psychographic profile.
>
> So now the next set of insights you're getting is about that profile. The person then acts strategically in determining what to do given this information. Underneath that is an understanding of why and how to work with this person. It is about understanding this person better. Here's how they are. Here's what to do. Here's what to take away and understand regarding this person's patterns. We build our AI to work this way. I want to provide an answer to their inquiry about what's in it for me. I'm giving them a spoonful of sugar. But then I want to make sure that our work translates into an ongoing, deeper understanding.

The challenge is that AI can't provide all of the nuance to be found in complex human interactions. For instance, Jack Westfall notes during the Salus forum session that part of the fun he gets in clinical practice is trying to figure out the relationship he has with his patients:

> I'll make a joke. I tend to use humor a lot in my clinical interactions. And then I gauge the response. And what about the 400 facial movements? I think I can detect 350 of them. And I'm pretty good at seeing somebody's response, even if their words are different than their body. I really like to figure that out. And what that does is provide me with the one-on-one, unique nuance. It is nuanced because this human being is different from the next human, who is different from the next human.

The many differences between human beings are quite evident and critical to the effective use of AI.

Personality Differences, Projections and AI

There aren't 16 kinds of people like Myers-Briggs says. Or the nine types of the Enneagram. There are many more types. Jack Westfall has this to say about these differing types: "There are many more nuances. In fact, each individual is absolutely unique. I like sorting that out because I think that this individual understanding is ultimately what makes the relationship trustworthy.

Recognition of the differences makes the physician/patient relationship authentic. It becomes authentic because it is not just a matter of someone's personality type; it is also a matter of what other people assume your personality type to be. Full authenticity comes with the sharing of assumptions about personality-related behavior.

We begin with the assumption of the person having a personality. They have a relatively permanent set of traits. However, the projections that people place on us may be just as important as our personality traits. For instance, with the Myers-Briggs, it is valuable to provide people with feedback about what other people think their Myers-Briggs type is. An AI tool could provide feedback regarding how other people see us.

Projections and Power Relationships

These projections have to do, in part, with the environment in which we are operating. They have to do with the role we are playing. And that role-playing condition becomes particularly important for physicians. Because physicians (like judges, police officers, and some other people) have a huge amount projected on them. The projections occur because physicians (and judges, police officers, etc.) operate in an anxiety-filled situation. There's the white coat syndrome—especially with regard to hospitalists (as there is a blue uniform syndrome for police officers and black robe syndrome for judges).

As one of our Salus Forum physicians portrayed:

> Patients may anticipate an anxiety-filled conversation with you as the physician. That is the most important conversation they're going to have this month. And it's your Tuesday afternoon as a physician. You've got 40 appointments with these anxious people. So, the power dynamic is strong (and scary).

Let's make it very one-dimensional and simple. It's knee surgery. Someone is getting knee surgery. The doctor's a very good knee surgeon. He puts them on the table, uses the da Vinci machine, and the surgery is successful. Then the doctor sees the patient after a wonderful, successful, unremarkable surgery. And they tell the patient, "Hey, we did great. Here are five pieces of paper [stapled together]. This is your physical therapy. Here's the prescription for the PT. Come back in six weeks, and we'll reevaluate (whatever that means)." White-coated and distant, the physician leaves the room. The formal relationship is terminated. However, the "empty" physician/patient relationship remains in the room. It lingers with the patient as they prepare to leave the hospital.

Projections and Compliance

Patient plan adherence is dramatically influenced by that moment and how that handoff happens. And if we can understand the patient better, we can say, again, to be lazy, this is the kind of patient you have to bribe and motivate. This is the kind of patient you have to scare. This is the kind of patient you need to say: "Here are the charts and facts and figures." And you say to this one:

> Hey, if you want to be able to run with your kids when they're 14, you've got to do PT now.

Whatever the lever is that we can pull. We can be helpful if we can tell a physician here's the lever. Here's the right answer and the protocol for this person. It's just like imaging, but for their

personality. And we'll give you that information so you, the doctor, can be good with it.

In addition, you can then talk to the patient about what they're projecting onto the doctor. What are their expectations about the doctor based on the projections onto them? What are their needs for a doctor based on their makeup? And not just what are their needs, but how do they project that need onto the doctor? Either angry because the doctor didn't meet that need or projecting onto the doctor a whole lot of stuff about meeting the need, even when the doctor didn't intend to fulfill this need. It's powerful to go both ways. The higher the power differential, the greater the amount of projection.

At this point, it is relevant to reintroduce the notion of Allostasis and Polystasis. We begin to ask about the predictions we make about what another person is going to do or how they're going to react to my behavior. This prediction, in turn, is going to influence what the real reaction is. The feedback you're getting from your AI system can be quite valuable in this regard, for people in high-power positions must discover what other people think about them. Because the projections influence how other people see the physician or officer, and how they predict what the physician or officer's behavior will be. Full authenticity and effective professional practice require this sharing of perspectives and assumptions.

Focusing the AI System: Power and Appreciation of Differences

Given the important concepts regarding dopamine and oxytocin, as well as the role of personality differences and projections, the practical question becomes: "How do you use these AT technologies as pedagogical tools for teaching relationship building?"

Scott offers his perspective:

> Originally, we were planning on deploying AI in healthcare scenarios. We were going to build it out that way and then ultimately replace counseling and coaching at a very low level—easy stuff—and then augment with the hard stuff. We were hoping to really help with isolated at-risk teens. We were going to give them a coach at midnight, so they don't have to talk to their parents about that kind of thing. But we ran into HIPAA and all that stuff. So, we decided to shift. We ran our beta test earlier this year, and we're rebuilding based on that feedback.

He talks about the shift to a different population:

> We've made it a relationship coach for married couples. We decided the best thing that we could do for teenagers is help mom and dads of five-year-olds today. We can create a psychographic profile of you and your spouse. We will show you full reports on yourself and each other. You give the system feedback because it's going to be right a percentage of the time. We figure that out and work with you on that.
>
> And then you say, hey, I'm in a fight with my wife. How do I apologize? And how do I resolve the conflict? These are two separate things. Then our system says, remember your wife is an ABC and you're a one, two, three. So, your one, two, three is going to make you want to do this—but that's actually going to make things worse. And you need to do ABC because this is what your wife really cares about.

Perhaps AI can build a bridge between the husband on Mars and the wife on Venus.

Husbands and Wives

Scott offers a hypothetical example:

> My wife and I just had our anniversary, and I asked my system what to do about it. And it said, remember, she cares more about having a reservation than she does about going to the restaurant. That is my wife. And her knowing that I made a reservation 10 days ago is way better than whatever she's going to order. That's just her. And it's not me. I was going to buy her a nice present. However, what she really wanted was a reservation at a nice restaurant and to know about it 10 days in advance.

At this point, Scott introduces the notion of "coaching" as the process being engaged by AI regarding this hypothetical example: "AI is helping coach me, or it says, talk to her about this. I still have to go talk to her about that. I still have to listen and respond and pay attention and all those things." Scott indicates that: "We've built our system to start with that relationship because we think it's a safe relationship of peers and equals. I want our system to be parent-kid dynamic—but I don't want to point an AI at any kid's brain until mom and dad have used it with each other and feel good about it. "

Scott notes that he started with husband and wife because he wanted to make sure that the power differential was as close to even as we could find. The aforementioned dynamics of projections are relevant here. Projections tend to be greatest when there is a large power differential and lowest when there is a low differential. Starting with the husband and wife (hopefully with a lower power differential) is safer than starting with the parent/child relationship (which typically involves a high power differential).

Appreciation of Differences

Perry Pugno offers his personal observations of AI, personality differences, and limited clinical encounters:

> I think [the use of AI] is going to be an evolving and increasingly aggravating problem as technology

continues to advance and tries to take out of our hands the very human need for human interaction. I worry about that, but this is very personal. And since we've been talking about things like Myers-Briggs, I'll just share an insight with you. My wife and I have been married for 54 years. I'm an ENTJ. She is an ISFP. It didn't take us long to figure out that we see the world very differently. And both viewpoints are equally valid.

Our children seek our advice because they know that we provide very high-quality analysis, support, and recommendations because we've together as a team. We can look at issues in very complex ways and kind of cover all the bases—we offer complementary ways. We learned a survival key early on. We realize we're looking at something very differently. We have to go back and start from a common ground. We're very different people.

We see the world differently--but we have very similar values. And starting from common ground, we can build toward a resolution of very different viewpoints. We start from the points we agree on, and we work from there. And I think that your program—in helping people manage those kinds of perspective dichotomies—might include a search for common ground as the starting point.

With regard to Clinical encounters, I truly regret the way clinical medicine has gone. The amount of time that we can spend with our patients is severely limited. I mean, our clinical encounters are down to six minutes of face-to-face time. It's hard to build a relationship . . .

As Scott notes, it is also hard in contemporary clinical engagements to convey important information and get the answers to the questions that both sides need in this short period of time.

Perry offers further observations:

> We have a generation that really does not value the longitudinal component of the environment. I wish there were some way we could push people back toward human interaction. But I think that recognizing the pathology that comes from the dopamine-driven experience is very important. I think that what [Scott's] trying to accomplish is going to be critically important. Otherwise, AI is going to kill us. AI holds hallucinations and lots of pathology within it. And unless we have a much better understanding of how that is going to affect us in the long term, we're doomed.

Scott offers his own observations:

> So, 73% of people on TikTok believe that it is addictive and unhealthy. 73% of them. Which is probably the same as cigarettes. A good friend of mine is a college sports coach. He just switched to a new school and is building the sports program to be better. He said to the team, hey, let's get some social media stuff. He was thinking about recruiting. The kids told him, "We don't want a TikTok account for the school, for our team." And he said, why? And they said, "Because we don't think it's healthy. We think it's a screwed-up, terrible thing, and we want to stay away from TikTok." So, something in this interaction is very hopeful in me. I see these kids recognizing that this AI world is not real. They are feeling that lack of something.

Scott relates this experience to his own work with AI:

> I think their judgments were really critical—because I was in the midst of building our AI systems. I was tempted to geek out on them. I wanted to build AI girlfriends. I wanted to construct this website where I can provide some avatars. I wanted to build an AI therapist. Let's test drive one of those, see what it's like. I wanted to

> build all this stuff. And it was just pages and pages of building your own fake girlfriend so that you can take pictures of a CG naked girl doing whatever you want.
>
> And then I thought to myself: "How can you look at the internet and say, I just don't think there's enough pornography for me. I need to start making my own using the most advanced technology I can get my hands on. How unsatisfying it must be to create your fantasy, to create your fake girlfriend, to create all these things." And then you turn it off. And you're still in your living room in the dark. That's all you have. It's better than nothing.

However, we need to use AI-related technological tools in appropriate ways to make relationships better than OK. We should not just settle for "that's all you have."

The Challenge of Depth

Scott notes that those working on AI are facing quite a challenge. He talks about the abuse of AI:

> The dating apps have turned into gamification for users. They're now optimizing for users because that's how they get the multiple to the VCs. So, the way they're going to make their money is by getting as many users as possible, not as many happy users. The same thing is true of BetterHelp. BetterHelp's funding is not based on patient outcomes. BetterHelp's funding is based on customer acquisition. And you have these algorithms focused on customer acquisition, not outcome generation.

It is important to note that part of the challenge that Scott is facing can be found in many other forms of human service. For instance, Cynthia Portlman's career counselling and life coaching services can be quite beneficial; however, her work can become quite superficial if guided exclusively by artificial intelligence. AI would be particularly helpful in assisting with the application of

cognitive behavioral tools; however, AI can also contribute to the trivialization and abuse of these therapeutic tools. Something much deeper must often be engaged when dealing with complex personal issues and with complex interpersonal relationships.

Along comes Perry Pugno and his wife, Terry. They're in love with one another. And they are Myers-Briggs opposites. Then along comes Carl Jung (2013). He says to Perry: "you got caught up in your own shadow. Part of what's going on here is that you and Terry are dancing with each other's shadow. This is very powerful and extremely important." To understand why Terry and Perry dance with each other's shadow requires something other than cognitive behavioral therapy or cognitive behavioral understanding. It requires a deeper form of understanding. Their love probably cannot be captured with AI.

The moment when the two of them met and fell in love was probably not captured very well by AI. Perry is going through profound challenges with his wife right now. These are wrenching moments that cannot be captured with AI. There are things going on with Perry and his wife that are much deeper and in many ways are quite spiritual. This is where Carl Jung comes in.

Loneliness, Compromise, and Common Ground

As we have noted, the core challenge that Scott is addressing may concern loneliness. This being the case, we really need to focus on young people. Can we get the young parents to work together, like Perry and Terry have done, with their ability to see each other, understand, love each other, complement each other, and recognize, perhaps in a provocative way, that they have fallen in love with their shadow?

Compromise and finding common ground for the common good should be fundamental values in our society. Unfortunately, these values appear to be thin right now in our society, maybe in our world. Compromising is disallowed currently among our

congressional folks and politicians. The skill set appears to be disappearing. We don't think this is because of the Internet. We are not fully aware of all the casualties that the Internet inflicts on us; however, polarization appears to be decreasing the sense that we can find common ground.

Jeremy offers his personal reflections on the critical role to be played by compromise and the search for common ground:

> I'm in the phase of life where I have a launching son. Now he's much older than I was when I launched. So, I've had an intolerance of his protracted adolescence—for which he is personally responsible and for which our society is responsible. My wife and I have been reinforcing his behavior--without really realizing it. It is our inability in some ways to work in harmony with our son--in the way that Perry has mentioned with his wife. So, we're on that learning curve, which I find kind of provocative.
>
> As Scott has suggested, there is a large group of young people who are very lonely. We already know that the number of relationships in their life are way down. Meaningful personal relationships with living people are way down. Their relationships with avatars appear to be increasing. I've noticed in that age group that boys are struggling in particular.
>
> The stats show that the boys, in particular, have a quest-like vision of what the computers are giving them. They're doing safer quests. I wonder about psychological safety—a topic that has been pretty prominent in recent research around teamwork. Scott, it is like you're coaching and helping people find a safe way to translate with one another. It's like a co-translation process. I find this to be fascinating.

Scott comments:

> There's a version of our software that we're talking about right now. It works like a Google Translate where two people are having a conversation and the system is translating the meaning for you in real time. You just put an iPad between the two of you while you're talking. It gives you both insights and notes while you're having that conversation.

Scott has offered an important concept regarding *Meaning*. Many times, people chat without recognizing the meaning that is flowing between them. The flow of meaning is inherent in the acquisition of wisdom.

Jeremy continues his narrative, building on the dynamic of meaning:

> I can give an example from a book my wife and I are reading to help us launch our son. It talks about how a parent will say, "When are you going to get a job?" And the child hears, "You think I'm a failure, right? The real intention is: "I really want to help you find a job. I'm really worried about you. I want you to be successful."
>
> And one of the things that the therapists in these situations will do is simply translate back and forth. Then there's understanding and empathy. The co-understanding then leads to behavior shifts that the parents were trying to induce. And the authors suggest that you, as a parent, discuss how it's impacting you rather than what change in behavior you're expecting of your adolescent/adult child.

We would note that we are now up to 30% with regard to adult children (ages 25 to 30) living at home. That number keeps going up in part because rents are so impossibly high. Obviously, there are many other factors contributing to this trend. However, interactions with parents are a contributing factor. Gaming is also

part of it--particularly for the boys. Girls are also into social media, but in a different form and with different motivations.

Artificial Intelligence: The Current Scoreboard

The mid-21st-century scoreboard would suggest both wins and losses for AI as an important digital technology. Cynthia Portman has good reason to be concerned, yet also to be hopeful. Relevant to this scoreboard, Scott offers several concluding comments about AI and its impact (both good and bad). First, the current negative impact (that worried Cynthia Portman):

> [AI has created] a receding pocket of humanity, of artistic expression and ability. That pocket still provides a sacred difference. But it is receding. This pocket will continue to recede as long as we're building AI tools around the idea of how I can automate, how I can replicate, how I can scale, how I can make things easier, faster and better for me and my shareholders or my administrator. The person engaged in the creation of AI tools is then creating a path towards automation. What they do is being automated and their value is being automated.

And now the positive potential (that Cynthia Portman also recognized):

> [With AI], we can consider doing something that we couldn't ever do before. We can envision how to do things that are completely novel. Here is a lazy example, around which we can readily wrap our heads. When I was doing a clinical intake, it was mostly focused on mental health. For many of you, it has been more focused on healthcare. In doing that intake, I might ask: how can I automate session notes, so I don't have to fill out notes in the EHR 40 times?

> Okay, that's neat automation, but that's not changing anything. That's not making new things possible. If we could instead ask what if every time I'm walking into a client session or a patient session, AI provides me with a quick reminder: here are the three things from the last time you talked to them. This is their profile. Here's a subjective understanding of this person. Here's where their real needs are right now, based on the intake from your nurse or your physician assistant. These are their needs, So, you can practice better medicine.

Scott offers the following advice to healthcare professionals regarding the potential use of AI:

> You can practice better care because you're treating what they really need instead of what is the average set of needs for a person in this situation. You can actually do more focused helping, not just healthcare. You can actually care. You can understand what it is like for this individual person. And Jack, I'm with you on that. That's the fun part of the job. Understanding is great.
>
> So, if there's a little birdie on your shoulder that's whispering an additional stream of information that's designed to help you be you. It's designed to help you, not replace you. It is designed to improve your ability to understand, empathize, and connect with this person. That's what we offer. So, it's an Iron Man suit. You get this Iron Man suit—but you're still Robert Downey Jr. in there. You're still a human being with your stuff, but now all of a sudden you have extra abilities so you can be even more effective.

Scott provides the following vision about the use of AI:

> These AI systems are going to get better and better at simulating things that it can't really do now. It will stimulate our brainstem and our sympathetic and

parasympathetic systems in the same way that a scary movie never puts us in the kind of danger that we love. It is about adrenaline. And that's what pornography provides. The young people know it's not for them, but it's better than being alone. It's better than nothing.

I'm never going to get good at basketball, but I can play basketball on the PlayStation. I'm never going to get good at football, but I can play football on the PlayStation. What if we can build these tools so that you can be good at relationships? So, you can be a better pack animal. You can be a better social ape. You can better interpret the grunts and whistles and clicking and popping that we all do with each other—that we call speech.

What if I can actually understand you better than ever before? Because, I mean, the last 24 hours [presidential election] has shown that better understanding is needed. We are more apart than we have ever been, and we don't understand each other. And half the country is completely shocked at the other half of the country's choices this morning. All of our tools are designed around that being the case, because dopamine is confirmation bias. Confirmation bias generates dopamine. So, you get this echo chamber of familiar sounds that appear to be telling the truth. "I'm doing great. I know the truth. I'm a good person. The people on the other side are the bad guys. We're the good guys." It's easy to get into that mindset.

Bill Gillanders notes that AI has already had a positive impact on specific health care practices:

I've been impressed with the evidence-based publications coming out about how the triage chatbots are quickly replacing the nurse advice lines. They are much better received than the nurse advice lines because they don't

> cut you off prematurely and are programmed by AI to provide empathy and understanding—as well as reasonable follow-up questions. I had an experience calling the nurse advice line and was very frustrated. I had wished I'd been talking to a chatbot because of the handoffs and the very transactional nature of chatbot interactions.
>
> There is typically no expression of sympathy on the part of real human beings. You know, nobody ever says, Bill, sorry you're feeling that way. Is this distressing to you? Do you think you need attention now or is this something that could wait till tomorrow morning? Nobody ever asked a question in the real world about how I was feeling and how I was interpreting the situation. However, apparently, from all I've read, the AI-powered chatbots do a much better job than the human triage nurses. This is an illustration, I think, of some of the issues about which we've been talking.

It may be easy to conjure up the image of physicians with their stethoscopes actually providing a recording of what Scott has been talking about. The stethoscope provides a summary description of the patient. So, instead of checking out what's going on in their patient's body, the physician is checking out what's going on through AI in their patient's psyche. Most importantly, Scott's tool may help each of us better understand those people who are different. Ultimately, we are all different.

His AI tool can help us identify what we need to get better at achieving our goals. We must get better at appreciating that our society is composed of many different kinds of people. Our communities are made up of families. And these are composed of dads and moms, and kids who want to be loved and feel safe. These are parents who want to know that their kid has a future. These folks just have a different set of priorities or beliefs about how to make it happen—but we can actually talk to each other.

And that is so missing right now on a political scale. Healthcare is so transactional at six or seven minutes per patient that you're not getting that depth. Teenagers are falling into screens and are plugged into these more than they are having face-to-face conversations. And college roommates literally type to each other while they're in the same room now.

That is now a very reasonable thing. They will be typing to each other with their backs to each other while they're in the same room or in the next room. And that is normal now, and that is weird. The defining technology on the planet right now is better understood by kids than by grown-ups. This is weird because that means grown-ups can't teach the kids how to use it. And the kids are figuring it out as they go.

Power, Arrogance, and Caring

Several Greek myths are shared by Scott as a way to convey the essential concerns about working with AI:

> The mental picture I have for all of this is based on Greek fairy tales. There are all the Greek tales of giving godlike powers to mere mortals, and it just goes bad every damn time. We've got a couple of thousand-year-old stories that just show us you can't just keep giving more power to these people if they don't care. And one of the great things about the gods is they don't give a shit about people. And that arrogance makes it really easy for abuse to happen.
>
> And you look at our society. There is abuse coming from the technology. And there is only one story in Greek mythology that goes well in this respect. It is the story of Cupid. And it is the one where love and collaboration between a demigod and a human work together. They're Cupid and Psyche. They come together. That is the rare exception in Greek tales of a wonderful, happy ending, because of love and collaboration. And I think that is a

nice corrective, given the dominance of science. It's good to bring out the humanities every now and again.

Salus might be another exception, in terms of a positive outcome regarding interaction between a God and human beings. Salus is not a Greek word. It is a Roman wish for health--and we are hoping that Salus-P3 yields a positive outcome regarding sustained health.

Conclusions

Irrespective of the way AI might be engaged by those working in the healthcare sector, a new skillset is required of family physicians in particular—and is probably also required of psychologists and behavioral health folks. We all have to learn how to stimulate and recognize what's going on between us in a way that takes time. That's part of the burnout of our profession right now.

Available time has shrunk so far that we can't deepen our relationships. We may be losing our personal oxytocin in the clinic. Our relationships have become transactional. It very well might be that a major impact of AI will be the challenging of contemporary healthcare skillsets (and mindsets)—at least as Scott Sandland has conceived of AI and has built a model to emulate a coaching approach to the assistance of human interactions.

Chapter Seven

Salus Perspectives, Policies and Practices

What does it mean if members of the most educated population in history are killing themselves at a rate that we've never seen? It comes down to something very fundamental. It's a very simple mistake we've made with computer systems. We thought social

media was going to make us feel social. We thought the internet was going to connect us. And we thought the exchange of ideas was going to democratize everything. All the things that we have seen recently suggest that this is not the case. What we have are echo chambers. We have silos, and we have people feeling more and more disconnected from one another than ever before.

We need to figure out how to build AI systems that encourage oxytocin, not dopamine. That means tools that help us better understand and respect each other.

AI provides harmful pathways for dopamine juicing algorithms that were designed to make our eyeballs stay on websites as long as possible. That has inadvertently made us all addicted in some fashion to looking at webpages and clicking things.

The challenge is that AI can't provide all of the nuance to be found in complex human interactions.

The projections that people place on us may be just as important as our personality traits.

These projections have to do, in part, with the environment in which we are operating. They have to do with the role we are playing.

Compromise and finding common ground for the common good should be fundamental values in our society. Unfortunately, these values appear to be thin right now in our society, maybe in our world. Compromising is disallowed currently among our congressional folks and politicians. The skill set appears to be disappearing. Polarization appears to be decreasing the sense that we can find common ground.

The stethoscope provides a summary description of the patient. So, instead of checking out what's going on in their patient's body, the physician is checking out what's going on through AI in their patient's psyche.

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Chapter Eight

Adverse Childhood Events

Dr. Cynthia Portman

Sometimes when I meet over a cup of coffee with Caroline, she shares something about her own childhood. Wow! This was a very hard life for her. It is indeed remarkable that Caroline turned out to be the insightful and empathetic counsellor and friend that she is. There is so much to learn about the impact of difficult events in our life.

I am increasingly convinced that these events help to shape the careers that we choose. I find substantial evidence that for some people, a negative childhood leads to either selection of a non-challenging job or to no job at all. These are the folks who gain virtually nothing from the career counselling I provide. In many instances, I suspect that they were pushed by an exasperated parent or spouse into coming to see me: "please get off your butt and schedule an appointment with Dr. Portman!"

For other people, such as Caroline, there can be a counterreaction to this negativity. They find purpose in their pain and establish a plan and pathway to not only their own recovery but also the recovery of other people. Caroline is my role model for this second pathway. They come in to see me and launch a whole new career. I know that I have played only a secondary role for these folks. Like Caroline, they are "self-launchers." I am mostly there to witness (and support) their expansion and growth.

Perhaps I should do a bit more research into the way trauma and stress can be constructive and motivating rather than destructive and de-motivating.

In this chapter, we build on the Salus-oriented examination of stress, trauma and allostatic load that we engaged in Chapters Five and Six. We gain an even fuller appreciation of the life that Caroline has led. Specifically, we focus on results from the Adverse Childhood Experiences Study and rely on the expertise

of Craig McEwen, who was actively involved in reviewing this study.

Adverse Childhood Experience Study

Conducted in 1998 with adult Kaiser Permanente patients, this study concerned the impact that (self-reported) childhood adversities have on the frequency of a variety of adult health issues, ranging from heart disease, cancer, chronic lung disease, and to behavioral health issues like alcoholism and drug abuse.

Those conducting the research identified what are now 10 categories of adversities: sexual abuse, physical abuse, verbal abuse, physical and emotional neglect, and household dysfunction, divorce, spousal violence, imprisonment of an adult, mental illness, or substance abuse of a household member. Each one of those 10 counts as a point, if an individual experienced them before the age of 16. One gets an Adverse Childhood Event (ACE) score of 0 to 10. That ACE score has been widely used and problematically used.

Limits of the ACE Study

The ACE study itself didn't recognize the biological mechanisms that are at work in translating adversity into health and behavioral issues. Indeed, the authors focused almost entirely on a linkage through health, behavioral health issues that they thought were psychologically compensating for adversity, smoking, overeating, drug and alcohol use. The link to toxic stress came through the work of Craig McEwen's brother, Bruce, and others, reflected in the work of the MacArthur Network on SES and socioeconomic status and health between 1996 and 2008.

As Craig notes, the ACE study has many limits. It ignored the social context of households that help produce and predict the very adversities they measured, like food and income

insecurity. And as a result, they failed to identify potential preventions of childhood adversity.

Indeed, the original article said, primary prevention of adverse childhood experiences has proven difficult and will ultimately require societal changes that improve the quality of family and household environments during childhood. That takes us pretty clearly to sociology and to social policy. The items included in the ACE score are much more likely for economically challenged households or families living in high poverty areas.

The study also failed to recognize positive experiences and protective factors that cushion the effects of adversity through supportive relationships and resources in communities and households. The ACE score, the simple rubric that's been widely misused, especially in California, has been used to promote the view that individual ACE scores have predictive value They do not. They don't predict an individual's health. They are epidemiological. It was an epidemiological study that suggested differential rates of health outcomes, depending on the number of ACEs people experienced.

The MacArthur Network included Bruce McEwen and Sir Michael Marmot, who, along with Richard Wilkinson, developed the idea of social determinants of health, really in the same year, 1998, that the ACE study was done. It's the social determinants of health that provide a more useful framework, both for understanding the substantial differentials in adult health and child development.

Underlying that linkage between social adversities, some of which are in the household, and childhood and adult health and well-being, is the notion of chronic stress or toxic stress that creates wear and tear on the body, and that even small effects accumulated over time can affect physiological functions and create, as Arlene Geronimus has said, weathering of the body.

Allostatic Load and ACE

The concept of allostatic load is closely affiliated with this study and the work done by Bruce McEwen. This term is now in the public health and healthcare lexicon. As Craig McEwen notes, allostatic load concerns regulation, and specifically the imbalance that toxic stress creates. The ACE scoring has brought an awareness that was necessary.

This term encompasses more than just adverse childhood experiences (ACE). It is often used by physicians as they address individual patient risk. Specifically, epidemiological risk is used in the identification of individual patient risk; however, the application of broad epidemiological data to the individual patient is quite problematic.

The application of ACE in medical practice has also been challenging because there are important factors that inhibit the potential long-term impact of ACE conditions. For example, previously in this book, we have considered the role that specific people can play as mediators of the stress experienced by a child. A single caring person can make a big difference in protecting against the effects of adversity. Many young people who are facing all the conditions that lead to these high ACE scores do not experience the health challenges later in life that were the focus of the ACE study.

Sometimes all it takes is one strong mentor, someone in their neighborhood. They're in a horrible, low socioeconomic neighborhood, but there's a mentor for boys or girls that may be a coach, teacher, or minister. It's someone who seems to make a huge difference in their life. They can mediate some of the stress in the child's life and address some of the challenges identified in the ACE study. That's why the absence in the original study of positive childhood experiences is a serious shortcoming. Toxic stress is defined as occurring in the absence of positive adult

support. So, when you have positive, strong adult support, people may face adversity but do not experience toxic stress and allostatic load.

Social Determinants of Health

Many states have taken to heart the social determinants of health and have gotten waivers under Medicare to provide wraparound services addressing the social determinants of health. While these efforts are to be applauded, there is little evidence to back up the claim that actual epidemiological factors occurring in childhood (rather than just self-reports of these factors) are related to the actual occurrence of illness. We don't know if actual intervention to ameliorate stressful childhood conditions make a difference.

We could find no studies that examined carefully and proved effective in terms of improving health, independent of just having access to care. Major challenges would be associated with doing this research, for the effects will appear over many years if they are to appear. You would need a serious longitudinal study, and in the aggregate, to tease out the effects. So, if you have interventions, you may certainly see adult health change 20 years later. Childhood health may change more rapidly, but these have to be longitudinal studies to gauge the change.

A study has been conducted in California that addresses this challenge to some extent. The California Medicaid system has launched a CalAIM program. It's a 10-year strategy, which means it's very hard to notice change very quickly. We will only find out more about impact quite a few years from now. From a practical purpose, one example of documented impact would be the substantial evidence that has been accumulated regarding the impact of housing. Being housed actually improves one's health outcomes. But again, evidence is epidemiological and retrospective in nature.

Venturing Forward with Sufficient Evidence

The ultimate challenge is to move forward without having the necessary evidence. Most of the health systems in the USA are trying to utilize whatever evidence is available (including ACE results) to get better services. Something must be done because we have the most expensive hospitals on earth. A new scene has appeared for those physicians who've been providing healthcare services for decades. Our hospitals now have a subpopulation who are homeless. They live in the hospital for months sometimes, spending enough resources to have housed them independently for years.

This condition of housing the homeless in hospitals exemplifies one of the great observations made by those in the MacArthur Social Network: all policy is essential health policy. Most of what happens in daily life—our social circumstances—powerfully affect health in much stronger ways than does healthcare. And as an example, the barriers to housing were often policies that were emphasized during the 1970s. However, access to affordable housing is unraveled in the state of California and many states. The barriers to housing are so complex that it's not clear that any policy is going to manifest itself very quickly. However, what's inducing California to change its building development laws, could serve as an example.

Ten years from now we'll be able to tell whether any of these new policies are working with regard to any impact on health. It's going to be very difficult to assess the impact even 10 years from now, because many of the waivers that allowed funding of those programs under Medicaid, particularly, are going to go away. So, with withdrawal of a lot of research funding, the study will be half completed. And we'll continue to have a debate. The impact of ACE and of social determinants of health are theoretically very useful, but we don't have solid evidence that will guide future healthcare policy formulation.

As another example, we can turn to the studies of rural health conducted by Jack Westfall, one of the forum members. There are families that, by some criteria, would be considered dysfunctional. That is, they come from a lower socioeconomic level and grapple with numerous problems. However, they have a supportive rural base. They're in small communities where people do seem to take care of each other. What about ACEs as they operate in rural communities? Do the ACE conditions have a different impact in tight-knit communities than in more anonymous communities?

Jack Westfall provides the following response to this inquiry. He directs his attention specifically to a study done in Nova Scotia, the eastern Canadian province:

> We've been doing a lot of work on how you develop community. How do you help a community become more integrated? And there was a sociologist, Alexander Layton, who did a big study in Nova Scotia for over 20 years. Called the Sterling County study, it found that those small towns that were less integrated or more disintegrated had higher rates of both what we would call common mental health illnesses, depression, and anxiety. These less integrated communities also had a higher incidence of what we used to call Axis One, schizophrenia, and bipolar.
>
> And the communities with higher integration had less of that. Layton proposed the concept of generalized stress. When a community functions at such a level that there's a high level of generalized stress, then everybody suffers. When there is one episode or one additional stressful happening, you cross the threshold into overt expression of a mental, emotional, and behavioral issue. Whereas with that same event in another community that is well

integrated, you wouldn't hit the overt stage. There's even an impact with some of the Axis One mental illnesses that we think are biological and untreatable.

This observation was made in the 40s and 50s, and it was a radical proposition that you could actually prevent mental, emotional and behavioral health by having a community that was more integrated. So, that's the work I've been doing in rural Colorado. We have a project called Comet (Changing Our Mental Emotional Trajectory). I won't say moving back to the good old days. And it's really trying to teach people how to find a way for members of their community to behave like a community rather than a thousand isolated people.

Some of the ingredients that Alexander Layton talks about are community leadership, community participation, clubs, organizations, activities that include lots of different people. A structure that supports people all along the socioeconomic spectrum. Those types of engagements that bring people together.

It's interesting to note that these are some of the same unique ingredients that Alexis de Tocqueville identified in early American communities (de Tocqueville, 1835/2000). When de Tocqueville begins to talk about habits of the heart, he is identifying some of the same conditions that Jack mentioned. More recently, Robert Bellah and his colleagues examined these same conditions (Bellah, et. al., 1985). Sadly, these conditions are often missing in the contemporary workplace. And healthcare is suffering profoundly from the absence of these habits of the heart. The well-being of healthcare workers is being damaged more now than at any point in history. We're going through a very difficult time right now.

Jack offers his own comments on the current condition in American health care:

> I rely on Alexander Layton to help me get through sort of the current morass that we're in. Whether you're a Trump fan or not a Trump fan, you can't deny that there is an increased generalized stress in society. Even one more adverse event can tip you over into overt expression of mental, emotional, behavioral health. And so, whether you like Trump's policies or not, there is this stress that's toxic to us.

For Jack, this is where we have to identify ways to mitigate that generalized stress.

Positive Sociology and Collective Resilience

The approach we have just taken is reminiscent of the early days of positive psychology, when attention was focused more on what is working than on what is not working. It sounds like there's a need for more positive sociology. ACE exemplifies the overemphasis on the negative. It points to pathology. Kids aren't important except for what childhood stress might give you when you're an adult. So, we're making ACE important because adults are getting sick, and it's costing Americans a lot of money. Obviously, we should try to help the kids, but that's going to be too difficult. We're just going to point out the problem. This was still a brilliant beginning.

Now, how do we shift that into what really works? This would seem like an opportunity for some really robust and interesting things to be done in the healthcare sector. Because, as primary care physicians and psychologists, we've noticed that an intersection has appeared. We've begun to acknowledge and recognize that as physicians and psychologists, we have less impact on the health of communities than we thought. That's been a very humbling experience for many of us in the healthcare

community. We have probably had an impact on about 20% of overall healthcare. Public health has a much greater impact, and social determinants of health are key.

Unfortunately, as Marty Makary (2019, p. 229) observes, little attention is given to public health matters—even though a strong case can be made for attending to these matters. Furthermore, while public health does a fairly good job of addressing crises caused by natural events, those that are socially determined (inflicted on ourselves) are less successfully addressed, even though they are far more abundant. Makary (2019, p. 229) points to the failure of the contemporary medical system (or at least medical schools) to address health care issues and take social determinants into account:

> Perhaps the greatest omission of medical education today has to do with the fact that most of our problems in public health are self-inflicted. Despite best intentions, medicine's limited view of healing has resulted in some of our greatest health care challenges.

Hopefully, the humility and humbling associated with the diminished role played by healthcare providers in the domain of public health will hold. Something does have to change. A shift is desperately needed because most clinicians and therapists are not that interested in learning about a new problem or challenge unless they know what to do about it. So, where do we go from here? It can't be simply a matter of curricular reform in medical schools. The challenges in contemporary health care go much wider and deeper than medical school reform.

For instance, where do we begin addressing the social determinants? Even though ACEs have hit the radar, there's a lot of avoidance behavior: "Who am I going to ask these questions? Do I ask the parents, or do I ask the kid? What do I do if the ACE score is high?" And why does screening matter if an ACE score is

not predictive for individuals? There is even a question about how to screen in a primary care setting. The screening can be rather intimidating. So, the uptake of screening for ACEs has not been robust. The talking about it has been robust, but not the implementation.

Jack offers the following observation regarding the struggle to use ACE:

> We tried to implement with a group I'm working with nationally, having medical assistants do the screening for ACEs. And we had to stop within a few months because screening for ACEs amongst our medical assistants, who were mostly lower socioeconomic, lower education, was triggering. All of our clinics were having to deal with all of the stuff that came up for our staff who were doing the screenings. And so we had to stop doing it for a time until we could sort out what we were going to do next.

Craig offers his own observations:

> I think Jack's right on the money. The differences that Jack talked about among rural communities, can be found in neighborhoods and in urban communities. Community structure matters. And we have *Bowling Alone*, if you remember that book, and the loss of social capital, people connected to one another across varying divisions. And that loss of social capital is part of the disintegration of communities.
>
> One of the concepts that people talk about with respect to ACEs is building resilience. And too often, in my view, resilience is thought of as an individual quality. It's the grit that an individual has. In fact, Yuri Bronfenbrenner alerted us to the fact that it's a community, a collective property. To have resilience in a community, you need to have positive social supports,

> places to turn when there's trouble. And individuals are not just on their own. They live in communities. So, community structure matters.

The matter of resilience might relate directly to what we introduced in Chapter Five regarding hardiness. Resilience might also provide a key to understanding something about the life now being led by Caroline. Both resilience and hardiness might be bolstered by a supportive community (that is filled with de Tocqueville's habits of the heart) and by the presence of caring mentors and families (also filled with heartfelt habits). However, was this support available to Caroline as she was growing up or in her current life (especially, given the desertions of loved ones in her life)? Maybe the support she received has been based on the community of care she has found in her professional life.

During a Salus Forum meeting, Jeremy shared a brief story that relates to this matter of community support for resilience and hardiness. It specifically concerns the absence of support in a healthcare community:

> There was an experience that Mitch shared with me. Mitch does some work with our residency program, and engages in wellbeing discussions with the residents. One day he talked about resilience. The three residents raised their hands and said, "That's a triggering word for me".
>
> And he was like, what? And they explained, "Well, I keep feeling like everybody's telling me I have to do something to change how well I'm feeling. And I feel like the health system is a mess and nobody's talking about that."

Clearly, the residents felt harmed. Mitch told them that resilience and well-being are manifestations of community, not necessarily individual manifestations. Resilience is a grossly misunderstood and harmful term when used in a healthcare setting. Doctors are told: "You need to relax or meditate. And you do. Doctors are told

that there is something wrong with them if they are not resilient." That's one of the reasons why physicians often burn out. However, most of the research shows that two-thirds of burnout are systems issues and only a third are individual. We might extend this insight to the entire healthcare community:

> We are harmed when told to be individually strong and resilient ("buck up!"). We only find resilience (and hardiness) when finding ourselves in an important learning-rich threshold.

This threshold exists when the challenges we face are matched by the support we receive from other people. (Sanford, 1980; Csikszentmihalyi, 1990).

Clinical Implications

In one's clinical practice, it is important to be sensitive to the social determinants of health. Presumably, you include some aspects of that in your clinical interviews, but it is looking back at the person's life. It is like BRCA, where you say: "You're at very high risk for going down from a bad cancer, or it appears to me from my clinical investigation that you're very fragile. You should be aware that you're very fragile. I expect you to have a mental breakdown in the next five years."

Obviously, this is not what you say. So, what do you do with this clinically? That's part of the frustration with using ACE or addressing allostatic load. We're looking way back in a person's life, which seems to have significant predictive value about fragility and resilience, but it has little predictive value for individuals.

For someone with depression, it may help them understand some of its sources; however, it does little to help them address the depression itself. What about setting up a fragility registry in your EMR? That's part of the frustration. It's just that we accept

this conceptually, but when you're dealing with an individual human being in front of you, how do you speak to them about their risks and your prediction of how that's going to affect them? How do you help them change their circumstances to reduce risks? For example, how do you help them get safe housing.

There is a closely related question, as we talk about the stress being related to families. Is there any evidence about what sort of families work best either in aggregate or individually? Individually, is there a traditional two-sex mother-father, gay families, racial mix of the families? What does the research say about what type of family you come from? If the family is intact, are there differences among the types of families in which you experience early childhood development?

Craig offers his insights about the role of family structures:

> I don't know of evidence about the wide variety of family structures. The fact that divorce is included in the ACE measure suggests that the division of families does matter, but a major way they matter is that single mothers have lower income, and that economic insecurity is a powerful factor. So, I think that households that are economically secure or have high quality childcare are clearly different from a single parent with no childcare working in a job with uncertain and changing hours.

Craig turns to a concept offered by researchers at Dartmouth College:

> And one of the psychologists/neuroscientists at Dartmouth has introduced the notion of family chaos as a crucial factor in adversity. When childcare is uncertain, where a kid stays changes from moment to moment. Schedules are fractured. That is productive of toxic stress. So, household structure matters. I don't think

> whether it's a gay family or Black family or Latino family really matters. What matters is the structure of the family and their resources.

Walt Mills offers a cautionary note regarding the impact of family structures. He reflects on the changing nature of clinical perspectives in recent years:

> We're talking about [research done during] the 1970s and 1980s. The mind-body connection was not at all recognized. It was actually disputed. And you were weird if you actually talked about spiritual aspects to health, let alone emotional or psychological aspects. Now, it's good for us to appreciate how far the collective consciousness in healthcare has proceeded. I walk in a room and if I mention the word meditation, the response is, yeah, I tried it. Oh, I know that. Oh, I have this app. Oh, look at this. You know, it's not weird. It's almost a norm to a degree.
>
> The same thing with ACEs. It was a breakthrough to actually document that something, in this case, epidemiologically. The mind-body-spirit, all those connections, how would something that happens to me when I'm two years old relate at all to what's going on when I'm 45 having premature heart disease? Wait a minute. Where's the science of that? We have a long way to go to understand the psychoneuroimmunology, et cetera, et cetera, for all these connections, but it's very exciting to see we haven't gone back.

Jack adds to what Craig and Walt have shared:

> Craig, thank you for sharing the original story of ACEs with us. I really appreciate that. I think others have said it was a great introduction to this connection. It provided us with a place to bring together this dichotomy

of mind-body. 100 years ago (or 1,000 years ago) mind and body had been separated by scientists and philosophers and theologians. You have provided a great opportunity to bring those back in with a biological plausibility.

And as important and necessary as ACE is, it is not adequate. It didn't include moderators. It didn't include mitigators. It didn't include positive events. So, it may be time for us to think about redoing it. It's 30 years old. Walt talked about the 70s and 80s. Divorce was a big deal in the 60s and 70s. It's not anymore. Gay couples were a big deal in the 60s and 70s. They're not anymore. I think many other things are going on.

The shift in clinical practices has been informed not only by the mind-body (and more recently the mind-body-spirit) perspective, but also by the basic concept of Allostasis offered by Peter Sterling—the focus in one of our earlier chapters. Allostasis is a fundamental biological process that's relates, in this case, to the child's prediction of the environment. As Sterling would indicate, the child's (and adult's) physiology reacts not to the reality, but to the predicted reality. We can also bring in the aforementioned concept of family chaos.

We can dust off a concept offered by Eric Erickson, the noted developmental psychologist. Erikson wrote about the fundamental issue of trust. What we now know is that if one has found very little trust in childhood, somewhere in our 40s and the 50s, all this comes out to haunt us. So, if we think of allostasis, then what if the child cannot predict—or even more importantly, can't trust the predictions of what's happening to them, given the chaos. Even later in life, in the 40s and 50s, you find massive crises on the part of some people who come with a fundamental lack of trust. Similarly, Walt Mills has talked about love (or predictive caring) that occurs very early in life? Without trust and love, there

may be a late-life psychological trigger, a physiological explosion, or a biopsychosocial time bomb.

Craig reflects on their developmental observations:

> I think one of the things that may be missing from the discussion [of ACE] is that these things happen early in life. They happen to kids, and kids who can't trust, who are particularly reactive to the environment, have troubled childhoods. And that affects life course development. Yes, we are talking about things that may happen well into the 40s and 50s of a person's life. However, the ACE study was done with adults and focused on adult health, and it left out the potential of severe consequences for kids regarding all of the problems we've been talking about.

We've been considering trust and love. We have focused on individual relationships. We can return to families and communities. Jack noted that SCOPE notes were used back in the day when he was teaching in residency. C was added to SOPE, the standard subjective objective assessment plan. The C was context, and this was in the 90s, when everyone in the family was in one folder, and then each individual had a folder.

Jack observes that: "When we went to EMRs, we lost the ability to do that. And unfortunately, I've not seen a good EMR that really pulls both family and context into the note". Bill G noted, in fairness, that:

> EPIC does have a very nice social and family history module that you can put in any note, or you can attach it to the overall context of that particular chart. But people don't tend to use it very often. When we were participating in the Comprehensive Primary Care Plus initiative, that was a required element that you included in your charts. The problem is that you were supposed to

have some sort of intervention plan associated with that plan. That was part of the requirement of participation. And that proved to be extremely difficult.

As we noted previously, physicians tend to avoid identifying an issue for which they don't have a solution. It is hard to report on social, family, or "contextual" issues if you have neither the tools nor the time to address these issues as they impact on the health of one's patient.

Community Implications

What about the sense of trust that's a collective? In the study of rural health, there are families that by some criteria would be considered dysfunctional, at least amenable, or vulnerable to crises for the child. But somehow in those settings, the child does all right. In studies of urban health, are there not only nutritional islands and nutritional deserts, but also islands of alienation and islands of healing and heart.

The connections between the individual and the community are very interesting and important. We also need to consider families as intermediaries. People have families of choice. Later in life, they may discard their family of origin for various reasons or expand their family of origin into their sort of family, what we might call family of choice. We have also considered the intermediary, the neighborhood. Rather than just going from the individual to entire community, we begin to consider the neighborhood. It is important to consider whether that neighborhood is real, like people living right around you, or the neighborhood is digital.

We used to think of digital as being something that throws people into alienation, but digital neighborhoods are becoming important mediators. There's the Dunbar number. Of 150 people, that's about the number with whom we have somewhat meaningful neighborly-like relationships. Maybe we're under-

exploring the many ways people are newly creating "real" and "digital" relationships. Some of these relationships may be very unproductive. For example, radicalizing themselves and becoming terrorists would not necessarily be a good use of neighborly connections. But there are virtuous neighborhoods that may be popping up in the virtual realm as well. So, there are some hopeful signs there.

The community setting also relates directly to an important process called *Post-traumatic Growth*. This is another area of emerging science. We don't want to say that we should traumatize everybody because then they can grow. However, going from PTSD to neutral would be good. Going from neutral to growth would be great.

We now know that maybe a third of the population that experiences the same event will have a transformative life experience that changes them for the better in their own minds and lives. A third will stay roughly the same, and a third can get the PTSD-type responses. Clearly, Caroline is someone who belongs in the post-traumatic growth category.

Knowing those facts, there are important questions to ask: Is there a way to nudge people in the right direction? Does the supportive community enhance the capacity for post-traumatic growth? Is this once again a case of resilience and hardiness being dependent on the community's habits of the heart? Once again, do we look to Caroline's professional community of care to find her pathway to post-traumatic growth?

Temporary Communities of Heart and Health

Obviously, it is not easy to build or sustain communities in which resilience and hardiness are nurtured. Neighborhoods that heal a child's heart that has been wounded by adverse events are not commonly found in contemporary cities—or in small rural

communities of the mid-21st-century. However, we can identify settings and communities that either serve a healing function for a short period of time for its residents or are themselves in existence for a limited period of time.

Mark offers a personal narrative regarding a setting in which healing occurs for a limited period of time:

> I remember in the 60s and early 70s that my dad was getting kind of burned out on teaching. And he shifted gears from the public school system to a school affiliated with the Holy Cross Brothers. It was called Rancho San Antonio, Boys Town of the West. It was in Chatsworth, California. They took kids that were under 18.
>
> Most of them had been arrested for something like grand theft auto, but there were also those arrested for murder. They couldn't be prosecuted then in the late 60s as adults. I don't have a lot of data on where a lot of these kids ended up. However, I know two of them, thanks to the mentorship, did in fact turn their lives around. It's a very small sample size. But just to reinforce what we were talking about, there are some positive mitigating factors in the ACE metric.

The mitigating factor also is found in communities that exist for a limited period of time. There's the potential role of a temporary system which one can enter for some period of time and find it to be supportive, healing, a source of resilience and hardiness. So sometimes it's not permanent systems that make a difference. Sometimes it's temporary systems that can make a real difference. During one of the Salus forums, Jeremy was in the middle of a temporary system that could impact his life. He was participating in a silent retreat that existed for one week. During this period of time, Jeremy could explore aspects of himself that get "drowned

out" during days of active conversation and transactional relationships.

Mentoring

There is also the aforementioned role of a mentor who serves a temporary role during the life of a young person. While a family member is usually "here to stay" in the life of a young person, the mentor appears at a specific time in the life of the youngster to serve as a role model, inspirer, challenger, protector, or (simply) good listener.

Often the mentor serves as a Coach—remaining on the sidelines but always being there to offer strategy and encouragement. While the mentor may remain in the young person's life for many years, their role as someone helping the youngster is usually limited to a specific time and a specific role. They should not be Dad or Mom, but they can be like a favorite Uncle.

A physician or psychologist doesn't typically serve as a mentor to someone that they are serving in a healthcare capacity. However, they can serve as a certain kind of teacher who uses ACE scores to inform the person they are serving. Craig puts it this way:

> While I have been down on ACEs as predictive. However, I've had personal experience, and I know my brother did, of helping people who are experiencing difficulties in their lives, helping them understand ACEs, and helping them to some degree release themselves from guilt for being fully responsible for those circumstances by understanding how early childhood may have impacted them and shaped part of their lives. So retrospectively, it can be quite useful for some people.

Craig then offers a metaphor that relates directly to the matter of resilience, hardiness and stressful settings:

> Research on orchids and dandelions suggests that there is differential genetic susceptibility to being responsive to one's environment. The orchids are very responsive to their environments. So, they are badly harmed by adversity and very much helped by good support and opportunities. By contrast, the dandelions tend to grow however they're going to grow, regardless of conditions.

So, adversity doesn't affect everybody equally, and genes do play a part.

Epigenetics

Some of the differences between orchids and dandelions in the human body might relate to the matter of epigenetics. Epigenetics spurs nature and nurture in important, health-related ways. Craig brings in the work of his brother once again:

> My brother had a great focus on epigenetics. Ways in which social circumstances -- adversity -- might affect the neuroendocrine system, which affects gene expression. So, it is a central element of the biological connections between health and adversity.

Epigenetics may be part of the bridge between stress and health. There is such a thing as intergenerational toxic stress. Several studies have revealed that if one generation is in the midst of starvation, three future generations are impacted. The epigenetics of their grandchildren are influenced.

Epigenetics might even serve as a bridge between sustained life and the prospect of death. This is the matter of epigenetic clocks. An *Epigenetic Clock* is a biomarker of aging that can be used to estimate "biological age". We know that DNA can change over time and regulate how genes are expressed. Recently, new epigenetic clocks have been developed based on the histone code, chromatin accessibility and nucleosome positioning. A few

patients are starting to check their epigenetic clock. They want to slow down their aging. It's engaging rich people mostly right now, but there are some real opportunities—and that gets into the AI aspect that Walt brought up. It's so complex, all these databases and what's impacting what. Perhaps AI will be helping to sift this for us, hopefully in a virtuous way.

Conclusions

Craig has introduced very important concepts that hold major implications for shifts in lifestyle and overall health reform. If we don't collectively address the challenges inherent in social conditions that produce toxic stress, lifestyle changes, and healthcare reform, then problems continue to happen. From a Salus perspective, it's important to talk about the community and the individual regarding resilience and the effects of adversity on people overall.

The ACE score is part and parcel of the whole. People aren't sleeping, and their cortisol is up. Then their diabetes is worse, and they're not sure why. And then they're nervous. Then they're not going out. And then they're not making connections. All of this relates to the overall metabolic problems that we've seen in previous chapters, being manifested in the form of disease.

Chapter Eight

Salus Perspectives, Policies and Practices

Underlying the linkage between social adversities, some of which are in the household, and childhood and adult health and well-being, is the notion of chronic stress or toxic stress that creates wear and tear on the body, and that even small effects accumulated over time affect physiological functions and create a weathering of the body.

We must consider the role that specific people can play as mediators of the stress experienced by a child. A single caring person can make a big difference.

There are families that by some criteria would be considered dysfunctional. That is, they come from a lower socioeconomic level and grapple with numerous problems. However, they have supportive a rural base. They're in small communities where people do seem to take care of each other. What about the ACE as it operates in rural communities? Do the ACE conditions have a different impact than in suburban and urban communities?

We've begun to acknowledge and recognize that as physicians, we have less impact on the health of communities than we thought. That's been a very humbling experience for many of us in the healthcare community. We have probably had an impact on about 20% of overall healthcare. Public health has a much greater impact, and social determinants of health are key.

Both reliance and hardiness might be bolstered by a supportive community (filled with habits of the heart) and by the presence of caring mentors and families (also filled with heartfelt habits).

We're looking way back in a person's life, which seems to have significant predictive value about fragility and resilience. When you're dealing with an individual human being in front of you, how do you speak to them about their risks and your prediction of how that's going to affect them?

Allostasis is a fundamental biological process that relates, in this case, to the child's prediction of the environment. The child's (and adult's) physiology reacts not to reality, but instead to predicted reality. Without trust and love (or predictive care), there may be a late-life psychological trigger, a physiological explosion, or a biopsychosocial time bomb.

Physicians tend to avoid identifying an issue for which they don't have a solution. It is hard to report on social, family, or "contextual" issues if you have neither the tools nor the time to address these issues as they impact the health of one's patient.

Epigenetics may be part of the bridge between trauma and health. There is such a thing as intergenerational effects of toxic stress. Several studies have revealed that if one generation is in the midst of starvation, three future generations are impacted because their gene expression has been altered. The epigenetics of their grandchildren are influenced. Epigenetics might even serve as a bridge between sustained life and the prospect of death. This is the matter of epigenetic clocks. Clocks that say something about biological aging. A few patients are starting to check their epigenetic clock. They want to slow down their aging.

Chapter Nine

Threat, Challenge, and Flow

Dr. Cynthia Portman

Caroline has truly inspired me. I have begun to focus more on my life coaching than my career counselling. I am taking the "risk" of working with clients who are concerned not only with their career but also with their personal life – including marriages, use of drugs, and even concerns about life itself (contemplating suicide). While I find this new work quite challenging and at times anxiety-provoking for me, I also find it highly rewarding.

There are moments during very intense sessions when I lose all track of time. I actually have to set up a gentle alarm clock by my chair to remind me that the 50 minutes are just about up. I also love meeting over much more extended coffee breaks with Caroline to discuss the remarkable stories I am hearing. I find that my counselling is now never boring. Each of my clients is now sharing a story that is worthy of any best-selling novel.

I also find that my own life is opening up for me. As I listen to the stories of my clients, I also hear my own stories being revealed. I know it is important not to get too wrapped up in the stories of our clients; however, I also know that I am a better life coach (and career counselling) when I can arrive at true appreciation for the insights reached by my clients during our sessions. I know that these are authentic insights because they catch "the edge" of my own life.

We conclude this section of the book by turning to more general concerns related to the Salus perspective. These are concerns related to the biopsychosocial dynamics of threat, challenge, and flow. Specifically, we are focusing on the neurological difference

between threat and challenge. These differences were identified in a series of research reports about the perception of challenge and threat among athletes (Meijen and Associates, 2020).

Having explored these differences, we turn to the related biopsychosocial phenomenon called flow, which moves beyond threat and challenge. As Cynthia Portman has observed, the compelling nature of flow resides at the "edge" of our consciousness. While we need to careful about blurred boundaries when finding "flow" in our relationship as a healing professional with other people, we also should not avoid the opportunity to be empathetic with those we serve. We should recognize that their insights may overlap with our own. Like a successful athlete, we can view our own vulnerability to the insights of our clients or patients as a challenge rather than a threat.

Threat and Challenge

What are the differences in neurological responses to these two conditions of challenge and threat? There's a theory of challenge versus threat in athletes. Residents and medical students really want to learn about trauma-informed and resilient-oriented health care. They want to learn about this stuff; however, we aren't really teaching them about trauma and resilience because we haven't really learned about trauma and resilience.

The younger generation is really hungry for this crossover training. This theory is relevant to all of us, whether or not we participate in sports or in medical education, because we're living at a time when the level of threat seems to be accelerating. This level of threat contributes to people's polarization in our society. Perhaps if we could figure out how to help people shift from a threat response to a challenge response, we could bring down the temperature and decrease unnecessary trauma.

Essence of the theory

Athletes elicit one kind of neurological response when they feel that their careers are threatened, or the outcomes will severely threaten their reputation. They don't feel like they have resources. Their brains then trigger the dual sympathetic nervous system with which we're all familiar: fight, flight, freeze, fawn. Many terms apply.

Fundamentally, a sympathetic outflow happens. Then their hypothalamus, pituitary, and adrenal access get triggered, and their cortisol levels shoot up. So, the combination of epinephrine, norepinephrine, and cortisol leaves the threatened person in either a freeze modality or sprinting away. The central nervous system blood flow diminishes. and the social engagement disappears. It's all about immediate reactive activities. Athletes under that threat-based neurological response perform poorly.

Their performance deteriorates—contrasting with the neurological response to a high-stakes challenge. This is still pretty early evidence; however, evidence that they have thus far suggests that when facing a challenge, the sympathetic nervous system gets triggered in athletes. However, instead of the anterior pituitary pushing out cortisol, the posterior pituitary pushes out oxytocin. And then neuropeptide Y is also secreted. The combination of oxytocin and neuropeptide Y calms down our amygdala and brings us to a lower anxiety state. In that state, the athlete's performance improves. As Cynthia Portman discovered, the challenge of effective performance is welcomed rather than leading to a state of fright and freeze.

Implications for Primary Care Medicine

We devoted a considerable amount of time to primary care during our Salus forums. This is understandable given that many Salus participants provide the primary care of mind and behavior. Salus-P3 is all about this caring function. Our shared concern is

that primary care is grossly under-resourced. We're constantly under a threat mindset. We have all this work to do. Studies have been conducted showing that if a family physician did all the things we're supposed to do in the clinic, it would take us like 22 hours a day to get it all done. So, we're constantly feeling inadequate. We tend to believe that we're not meeting the needs out there. Yet we're so under-resourced that we feel like we are besieged. How can we hold it together?

Despite all of that, we have great evidence regarding our benefit to society. We've been struggling, while saying that we have the evidence. "Look at the evidence. We're really helping" Yet this pronouncement has led to absolutely no new resources. In fact, we've seen a diminution in investment in primary care during that same period. So, it may be helpful to adjust our strategies of change (as we consider in a later chapter of this book). We must consider ways in which we might move out of a threat kind of state and into a high-stakes challenge state.

If we look at allostasis, the assumption is the human body is adjusting--based on its predictions, what it anticipates, and then adjusting to what it anticipates. So, does someone frame the anticipation as threatening versus framing the anticipation as challenging? This is the case. So, the question becomes, how do we interpret things as a challenge rather than a threat? And how do we modify our frame?

History often informs the peripheral nervous system in terms of what the next event will look like and how it's framed. So, a lot of the work with behavior management or psychology concerns that reframing process when working with people who have trauma-related triggers. Instead of working with the trauma or with an event that was traumatizing, we work to reframe it as a challenge. Cynthia Portman was increasingly doing this reframing in her work as a life coach.

There is another perspective to keep in mind. A powerful feedback loop is often engaged. We're threatened by the prospect of a threat, and we're challenged by the opportunity of a challenge. Double looping is going on there--which somehow makes the anticipation even more powerful. So, we say to ourselves: "Oh my god, I'm about to be in a place where I'm going to be overwhelmed!" And it's self-fulfilling when we anticipate what is about to happen. It becomes just the fear of being overwhelmed, not fear of the event itself.

Mark Vukalcic offers his own reflections on this phenomenon during a Salus Forum:

> I'm getting more deeply involved in music production, I just listened to a podcast about leaning into frustration. In effect, we are encouraged basically to look at things as a challenge, as opposed to looking at something as a threat and screaming at the monitors. That shift in attitude has resulted in some amazing creativity. They cited David Bowie on the podcast as one example of somebody who quite successfully reframed a threat into a challenge.
>
> I [would bring in the topic of] mentorship—especially in socioeconomically kind of deprived areas. Just a single mentor made all the difference in the world, turning hopelessness into potential positivity. I think it's all connected. As somebody who ran track against Olympic alternates, and usually finished last, I found my participation to be a challenge rather than a threat because I had a mentor who got me on the relay team. This made all the difference in the world to my going forward. Because I definitely could have gone the wrong way.

Bill Bergquist builds on Mark's insights:

> If you're not a fairly good athlete, you're not going to have that mentorship. And if you are living in a socio-

> economically disadvantaged setting, then you look out on the street for a mentor. Your mentor becomes the person who's pushing the drugs. So, finding a mentor is selective.

For women, sports could be one way in which they find a mentor if they're growing up in poverty. Unfortunately, not until recent years were women encouraged to engage in sports.

Type One and Type Two Fun

Jack Westfall offers an important distinction that is directly relevant to the matter of threat and challenge:

> This brings up a couple of things for me. There's this concept my kids have taught me. It's about type one and type two fun. Type one fun is like having a birthday cake. Everybody sings happy birthday to you, and you get to eat chocolate cake, and it's really fun. But then there's this type two fun that is like running a marathon, where it's painful, or being on a roller coaster, or seeing a scary movie, where it's really frightening, and it activates you.
>
> Afterwords it's like, wow, that was really fun. And this seems to relate to the notion of allostasis. Is this a threat? Or is this a challenge? Is this type one fun, where it really feels good? Or is this type two fun, where it's painful at the time, but afterward it feels good. I think maybe it's a matter of framing, or it's a matter of expectations. I don't know. But I do know that I don't like scary movies. On the other hand, I just ran The Turkey Trot, and it was very much type two fun. I was miserable for 50 minutes and 54 seconds. I know that because I had on a chip. But afterwards, walking back to the car with my kids and my wife, we were having so much fun.

There is also the matter of what occurs during the first years of life with regard to "fun" or the absence of fun and preponderance of

threat and instability. There's ample evidence regarding what happens during the first two years of your life.

Early Life Experiences: Fun and Threat

The way in which your needs are met by the world can set up the reaction you will have for the rest of your life. If, when you cry, somebody comforts you. When you're wet, somebody dries you. When you're hungry, you get fed. This really ingrains many of those responses for a long time. And that may be part of the framing of threat versus challenge.

This framing may be based in part on what happened in the first two years of life. "When I was hungry, I was fed. When I got wet, I was dried. When I cried, I was held. I know this because I was in a family that was responsive in this regard." So, it's easier for someone like me to see things as a challenge rather than a threat than for someone with an inconsistent or withholding childhood. We can have type one and type two fun.

Those with high ACE scores might find fun of any kind to be elusive. This lack of fun can itself contribute to a sense of sustained anxiety. In her study of lower-middle-class families living in Oakland, California—where high ACE scores were probably prevalent—Lillian Rubin (1992) found that a "world of pain" substituted for any world of fun.

One of our Salus forum members reported on what happened to a colleague during his first two years. His mother gave him up to his grandparents. When he cried, they put him in another room and let him cry. His grandfather was a Drunk and hit him. So, his response is almost always threat. There is neither much type one fun nor type two fun in his life. This man had a very different attachment experience early in life. That brings to mind the matter of adverse childhood events—which we considered earlier in this section of the book.

Adverse Childhood Events

The concept of adverse childhood events has really entered the lexicon of the primary care domain, and we are really trying to struggle more with what to do with this concept. It provides a link between early behavioral mental health challenges or threats and long-term, profound health impacts. These adverse childhood events lead to such medical conditions as obesity, diabetes, and heart disease. Suicide rates are off the charts with high ACE scores.

Given these potential adverse conditions later in life, it would be of value to compare children who had a good first two years of attachment and kids who didn't have a good first two years about the impact of an adverse childhood event at age five. Let's say one child was well-bonded and one of them wasn't. Both of them lose a parent at age five.

Is there research concerning the response at age five among those five-year-olds with a high and low ACE score? This issue is very important because it really speaks about where the world should spend its resources. How do we best spend resource to make sure that the quality of our first two years of life is maximized? We then spend less resources on the rest of a child's life because trauma may be less impactful at later points in the child's life.

Let's just say that the child was in a stable home for the first five years of life. The child loses their mother through death. This is a significant adverse event. And then they have multiple traumas compounding the trauma related to their mother's death. So how do we filter out this recurring trauma? So now Dad remarries, and that marriage doesn't last. There's going to be multiple sorts of traumatic events that build on that initial one. How does that shape the child versus the shaping that occurs during the child's first two years of life? It would seem that the first two years of strong bonding attachment impacts the rest of a child's life.

Jack Westfall offers a related anecdote from his own life:

> My sister-in-law died at 29 when her kids were two and four, but she and her husband had raised them very attached, very close, very tight. She died when the kids were young. He got remarried in a couple of years. His second wife was very good to them. They had other things happen in their lives, but they are both family doctors with kids who are well regulated. By all means and by all measures they are doing pretty well, despite having had this horrific adverse child event after the age of two and a half or so, or three. So, I just think there must be something there.

There could be something about anticipated challenge rather than threat in Jack's story, but we can't neglect epigenetics. You could be a member of this well-adjusted family and have these same things happen—like the one Jack articulating about his sister-in-law. However, if you're genetically impaired and you're somehow prone to a sympathetic arousal, then there is a different filter that we have to look at in terms of how you view this outcome of these childhood events. The history of support in your life plays a secondary role to the epigenetic propensity to quick arousal of the amygdala and to an accompanying predisposition toward threat.

Trauma, Agency and Resilience

In this book, we have referred several times to the role played by family structures. These structures certainly influence the way high ACE scores are handled. The family description that a patient may offer could produce an ACE score of one. If there is a severe traumatizing event, then a healthy family architecture will make sure it stays at one. Perhaps the context of a family structure limits the likelihood of externals causing repeated trauma to the child. The protection of the child is so emphasized that the child makes it through even though there's a war going on and things are blowing up. The family creates a sense of safety for that child that limits their ACE score.

People who are suffering from adverse childhood events may have a predisposing first two years that made them susceptible to the adverse effects of ACEs. However, many people who've had adverse childhood events aren't suffering from them. In the first two years of life, these latter people would have predisposing features that made them more resilient or more resistant to the impact of adverse child events. We believe that there has to be more than just adverse childhood events because lots of people have suffered from these events but suffer no long-term ill effects. When you talk to them, they don't shrug these events off, but they have moved on. The adverse childhood events are not impacting their life, whereas other people are devastating.

During a session of the Salus Forum, Bill Bergquist adds to this consideration of family structure and stability (especially as offered by the female members of this family). He recounts his experiences in Estonia during the years of the Soviet collapse:

> Gay Teurman and I taught a course together on trauma. We recognized that an event is traumatizing at least in part because you can't act upon this event. You cannot do anything to modify your victim. I was thinking back to the notion of threat and challenge. I did a lot of work in the early 1990s in the country of Estonia. This was the period of time when the Soviet Union was collapsing. One of the observations that I wrote about in a book about freedom concerned the women in Estonia. They were handling the collapse a whole lot better than the men. It was startling. But part of the reason was that women all through the Soviet era had been agents of adjustment and change. They were the ones who went out and got the food during the entire Soviet occupation of their country. They're the ones who made sure the family was doing all right. They were accustomed to taking action.

Bill reflected on the role played by men during this traumatizing period in Estonia:

> The men in Estonia, like most of us, just big bullshitters. They mostly sat around, kind of puffed up, and talked about politics. So, with the collapse of the Soviet Union, their narrative suddenly also collapsed--whether they were pro-Soviet or anti-Soviet. Life got messed up for them. I think for most of the men, it was more of a threat than a challenge. It just struck me that what the women were doing is framing their adjustments to the collapse as something of a challenge. Obviously, this is not the case for all women, nor is threat assumed by all men in Estonia and other Soviet countries.
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> I do think, however, that many of the women were finding this is a challenge, and the men were generally finding this a threat. The men were deeply distressed and often in need for psychotherapy. I was over in Estonia with several psychologists from my graduate school. They agreed that many of these men were messed up. It'll be interesting to see what happens here in the United State--now that we're going through our own little mini-revolution. Who gets messed up?

The early signs suggest that young men are having the hardest time dealing with what's going on right now. Young women are also struggling a bit. However, conditions have definitely shifted. It looks like boys are trapping themselves in a virtual world where everything looks controllable. They can win over and over again. They never die. They're in this artificial environment that is very addictive. A lot of these young men are lost.

The intersection between trauma and the perception of agency is critical. We're all aware of the increasing evidence that we really don't believe we have much agency in our life. And the biblical authors realize that. However, the perception of agency seems to be very helpful. With regard to what Bill was talking about in Estonia, there were (and still are) many men who had a misconception of their agency. By contrast, the women seem to

have a much more realistic view of what agency they actually could exercise. Perhaps this also applies to Caroline and her ability to find agency as someone experiencing post-traumatic growth.

Our discussion about neurotransmitters--the peptides—may relate to the more macro view of whether or not you have a realistic view of what agency you can actually implement. This connection between the micro (neurotransmitter) and macro (perception of agency) might be very important. There are several recent articles that came out in the family medicine literature concerning how much more satisfied physicians have been if they retain a sense of agency and control over their environment than those physicians who have felt that they had very little agency and little control over their environment. It goes back to the concept of freeze. You end up being mobilized, but you can't do anything about it. So, it just chews you up in a state of freeze.

To go back to the matter of resilience that we have considered at several points in this book, it is fully understandable that one would be resilient if this person had strong attachments during their childhood and into adulthood. They can relish the prospect of finding fun in many activities—even those that come with a moment of fright or challenge. The more intriguing matter of resilience concerns those people who grow up in a very hostile environment during the first two years of life.

There's absolutely no way they're going to have a fulfilling life, yet they somehow do have a successful life. What's that about? But then the issue is brought up about having that one mentor. Just having that one person can make a difference. So, we begin to look at these other factors, and particularly the one on resilience. We know little about how resilience is established and maintained. All we can do is marvel at resilient people, but we don't know a lot about this positive process.

We also don't know much about what we do with high ACE scores. We now know that high ACE scores predict major health issues. We now have the capacity to use a prediction tool to determine which children are going to have serious illnesses later in their lives. And yet the adoption of this screening has been very slow. In large part, this is because of the following reasoning: as healthcare professionals we are faced with a challenge when provided by those in the domain of marriage and family psychology with the whole idea about early childhood trauma.

As we mentioned earlier, digging into the nature and impact of childhood trauma can be traumatizing both to the healer and the patient. There's this concern that digging into the experience may reinforce traumatic events for the child. They can be re-traumatized. And of course, are the children going to tell you about their parents who are producing the traumatizing environment in which they live?

To whom do you address these questions? If you ask the parents, are they going to give you an honest appraisal or an accurate ACE score? If high ACE scores are identified, what is to be done? Are destructive behavioral patterns involving interpersonal attachment entrenched in the patient's life? If so, how do you modify these established patterns? Are neurochemical imbalances involved, and how do we treat these imbalances? Is fun a matter of behavior or of chemicals? Or both?

Neurochemicals, Attachments and Fun

Oxytocin is involved when we are considering type one fun. Actually, in many ways, the oxytocin is going to be flowing even before Jack's birthday cake is served. What about type two fun? Does it end up with oxytocin, or is there something a bit different at the end of this fun-filled type two episode? What occurs regarding hormones and neurotransmitters when you're exhausted? It's been a wonderful experience. It's almost as if I'm going to hit my head against the wall once again because it feels

so good when I quit. Some adrenaline must be involved in type two fun. There must be some adrenaline because as Jack noted, there's often a scary moment. In some ways, the reason it was enjoyable after the run is because the event's over. So, after the event (such as an amusement park ride) is over there is relief. This sort of experience induces a certain level of fear. There must be some adrenaline in type two fun. Furthermore, type one might be more closely related to dopamine rather than oxytocin. How then would that play a part in the choice between threat and challenge?

Chemicals aren't everything. In response to the question just posed, we would suggest that both chemicals and behavior patterns are involved in the choice between threat and challenge. Interpersonal behavior is also involved. Attachment bonding and attachment theory are relevant here. How you are bonded between the age of zero and two is critical. There can be a disruption in bonding even in functional families if there has been some extreme disruption.

As an example, one of us was talking to a client about this issue. Her girlfriend's parents lost their four-year-old child when my girlfriend was one and a half years old. The traumatized mom could not even bond and attach to the second baby because of her own grief. So even in what we would consider upbringing in a functional family, this breach of attachment can happen. As a result, life does feel threatening. As opposed to offering a challenge.

The issue is that type one and type two fun bring up the other part of the matrix. What is the external reality that you're facing? And you can be really fouled up if you misread a true threat as an opportunity and end up in the lion's mouth. The Romans and the Greeks were impressed with the Celts because the Celts pumped themselves up for battle and exhibited this fierce aura.

However, the Celts were easily slaughtered because they would run naked directly into the spears. So, there may be a problem

with this typology of threat and challenge if consideration isn't given to the external reality of whatever the challenge really is. If you mistake a real threat for either type one or type two fund, then you can be in deep trouble very quickly.

There is still the matter of neurochemicals. You can get addicted to your own adrenaline. You end up with people who are hooked on their own adrenaline. They need type two fun all the time. They need to keep pumping up, especially if they're at work. So, you have people who generate crises at work precisely so they can deal with the challenge. They're hooked on their own adrenaline and like other addictions, the amount of adrenaline has to continually increase.

Consider the Celts who were pumping up for battle. That means you have to be engaged in battle all the time. And you end up eventually with spears sticking through your belly. Obviously, when we look at the selection of people for the new cabinet, we have some folks that are hooked on adrenaline.

And there are addictions to dopamine. Dopamine is a focus in our chapter on Artificial Intelligence. As the CEO of an AI company for pro-social AI, Scott Sandland is looking to write algorithms that help secrete oxytocin rather than dopamine. This pro-social AI is to counter the current modality and focus on dopamine as a way to keep our eyeballs glued to the website. And the longer the current AI folks can do it through dopamine hits, the more money everybody makes. It's creating a whole addictive subculture now that's very hard to leave. I'm sure it's hitting both the health and mental health industries.

There are other major implications for the young at the present time. Now at 18 months, the bonding is with their IPAD babysitter. They're just mesmerized by these digital devices. And it'd be interesting to see the discernment of type one versus type two fun. Type one fun probably is dopamine heavy. There may be a dose of adrenaline.

The Flow Experience

The zones we have just been considering might ultimately be related to an extraordinary observation made many years ago by Mihaly Csikszentmihalyi. As we have noted, Csikszentmihalyi (1990) writes of something he calls a "flow state." Specifically, this is the threshold we experience when engaged in an activity that resides between a state of boredom and a state of anxiety. We may be entering a flow state when engaged in type one or type two fun. The flow state involves the introduction of a complex neurotransmitter. And this flow state may include an EEG brainwave phenomenon that has some very interesting outcomes for people.

Challenge and Flow

It's very hard to get into the flow state without a challenge being present. And it requires a fairly substantial challenge. Cynthia Portman could probably testify to this challenge in her work, as could Mark Vukalcic. His songwriting could be very challenging—but it's taking him to a new place of confidence and capability in his writing. So, on the positive side, type two fun is very important. It provides a way to maintain a challenge state versus a threat state. If someone was shooting at Jack Westfall while he ran the turkey trot, he might've had a slightly different outcome.

If the external environment signals a clear threat, then the threat response is obviously necessary. It kept all our ancestors alive. The reason we're here is that our ancestors recognized threats and escaped or avoided them. They gave birth to the next generation and avoided being consumed by the lions—or gave birth before the lion consumed them! So, we tend to be very astute about threats. In fact, we seem to be overdoing it. We would suggest that social threats are now overstimulating us.

With the introduction of flow, we might want to make life a bit more complicated than what Jack provided in his analysis. There might be fun 2A and fun 2B. The moment of joy might come when you're done with the run. However, the work on flow provided by Csikszentmihalyi suggests that in some type two settings, the flow is there in the middle of the event. We see this with rock climbing, for instance.

Jack suggests that there actually might be four types of fun:

> I'm just familiar with one and two, but there may be types three and four because rock climbing is one of those activities that is painful in the moment, but also fun in the moment. By contrast, running a marathon may or may not be fun during it; however, it definitely presents fun afterward. During the scary movie, you're horrified, terrified, and then somehow you enjoy the experience—at least some people do. I don't, I don't enjoy it. So, I think there are multiple forms of fun. And I think there's a growing science behind these types of fun. I heard about this science of fun on NPR. My kids have been talking about it.
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> I think there's a growing biochemical science related to this analysis of fun as well. I know that adrenaline is involved when I've taken a scary ride. And I'm sure that adrenaline is also involved when I see a frightening movie. I think that *The Shining* was the last scary movie I saw. I was petrified and it was definitely fight or flight.

Gay comments on Jack's observations:

> I want to muddy the waters just a bit. I resonate with what Jack is saying; however, if you examine the experience of an avid runner, an avid marathon runner, or rock/mountain climber, then you find the flow state. I wouldn't get to that flow state if I were to run a marathon, because I'm not conditioned that way.

There is also the creative act that Mark was talking about. Bill Bergquist offers his own personal account of this creative act:

> I absolutely hate writing. Yet I spend three or four hours a day writing. And it's in the midst of the writing challenge that I find flow. An hour passed. And I didn't realize it. I am totally immersed. And I suspect, Mark, that it is that way for you too. It is a challenge. And, you know, it is addictive in some ways. I'm sure, Jack, there are multiple things involved in having fun.

It's interesting to note how this study of Fun relates to the emerging emphasis in 21st-century psychology on what is called "positive psychology." Attention is being directed to things that are going well, rather than just focusing on neuroses, depression, whatever. What are the conditions that lead to joy? To fun? To happiness?

Bill Gillander offers his own consideration of these conditions:

> I was an ice climber for many years when I was younger. I found out that you can start out with pain, and you realize that your crampons weren't tightened quite enough and that your calves are cramping. And then you kind of get in a flow state where the ice picks are sticking properly. And then suddenly you realize that the ice screws are peeling out and you're going to take a fall. And you go from that flow state and perhaps a squirt of oxytocin to the zone of sheer terror. You hope to hell that the next pin will hold.
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> So, I think there's a very dynamic quality to this that we're not considering. I don't know if that's measured in any of the research. I mean, they don't have continuous blood sampling as the athlete goes from, "oh, this is pretty painful to, oh, wow, I really am doing well." And I'm kind of in the zone. And then suddenly you realize that you

> have hit the wall. What are the hormones doing during that transition? I don't know if that's been studied at all.

Bill Gillander's account relates directly to the allostatic process that Peter Sterling identified. Dynamic and constant measuring and feedback go back and forth.

Jack observes his own physiological reactions to Bill Gillander's account:

> I'm hyperventilating just hearing the story about ice climbing. I started to feel anxious. I don't know why.

Jeremy asks:

> Is that virtual challenge or virtual threat? Someone needs to find out what Jack's oxytocin levels are!

Bill Bergquist also inquires:

> So, Jack, what are you doing living in Colorado?

Jack responds:

> I don't mind looking at ice. My daughter-in-law is a climber. And my wife and I became certified top ropers in order to figure out how to do it. But I tried to watch the movie *Freestyle,* where the guy tries to climb El Capitan in Yosemite Park. I tried to watch it on the airplane a year ago on a screen that was like four inches. I could not watch more than 10 minutes of it, even on a tiny screen. It was just too much for me. I can't imagine it on the big screen or seeing it on the mega screen. I would have had a freaking heart attack. So, I think one of those type three or type four is just not fun. There may be one of those standards against which all others are judged--which is this is just not fun!

Jack brings up an extremely important point: if you have an accumulation of chronic stress, then maybe everything's a threat. Maybe that's what happens—because history has reinforced the

threat so many times that your predictions now don't allow for challenges to be considered. It might also be a matter of self-report. Referring to Jack's point, as a self-reporter, if your first two years of life were threatening in many ways, then it's going to color or filter the interpretation and prediction of other events. The potential for threat might be exaggerated. Thus, ACE might be a good tool—but is it a good enough tool?

Implications for Medical Clinicians

What we have been considering holds strong implications for physicians, psychologists, and other human service professionals. These professionals are being confronted with issues related to trauma and resilience all the time. They're not immune to all this.

Mitch Applegate traces out some of these implications:

> Several questions arise in my mind. First, can we overcome our epigenetics? I believe ACEs cause epigenetic changes that are predestination, but not destiny all out. So, I think the answer is yes. We can overcome our epigenetics. The question then becomes, how is that done? Positive psychology is a very important thing. I'm thinking about people locked in a threat state. It is hard to get out of this state because you're living within a mindset.
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> There is a frame that is so well-traveled. Everything is interpreted through a specific lens, a specific mental model, a specific story. We impose our own mindset without even knowing that we're doing it. We're talking about this matter of threat as if it exists as a separate appraisal.
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> However, when you're in that threat state, you can't see a separate appraisal as a separate vent. You are one with it. And I think that's the tragedy. It is not being able to see the threat state for what it is. We can't stand back from it

and then make adjustments. But when you're within it, I don't think there's a whole lot you can do to change your behavior. Epigenetics is doing that. Neuroplasticity might be engaged, but I think change in mindset and behavior is very difficult. The question becomes: how does that happen?

Mitch now turns to the experience of Flow:

> We can turn to the Flow state as a contrast. For me, when I'm climbing, I'm in a flow State. There is full attention to what you're doing. You're lost in the moment. It's pure joy. And it's just a little bit beyond what you're able, but you have to concentrate. And I think it's that concentration that puts us in a flow state. And when they look at the functional MRI of the flow state, the brain is lit up in multiple areas. It's a synergy of brain function that can't be sustained for long, but when you're in it, it's pure joy. And it's learning, and it's an output that's tremendous. So, where does all that take us?

Mitch relates all of this to the matter of threat appraisal:

> For me, there's a story. There's a story regarding what I'm aware of and how I interpret the things I'm looking at. And that story is not me. The big learning for me was: wait a minute, if I'm not that story then who am I? Let me focus on who that is. And the story kind of diminishes over time. I think the neural pathways diminish over time so that the threat response is still there. The threat state doesn't go away ever, but it loses its major thoroughfare for me. When I'm aware of the story that interprets everything, the motive behind all these things that happen are based on my story. If I'm not aware of that, I'm locked in. Once I'm aware of that, I get to practice something different.

Mitch considers this processing of a threat to be a particular "kind of fun." He is relieved, relaxed (and perhaps in a state of flow) when he realizes that he is not the story: "I'm not the threat interpretation that's going on. I am someone substantially different, and that's worth exploring in and of itself."

Neuroplasticity, Prefrontal Functions, and Threat

The neurological capacity to redirect cortical activities is intriguing and important. Bill Bergquist offers the following account of his encounter with neuroplasticity:

> One of the students that Gay Teurman and I worked with was a woman who is legally blind. She was studying neuroplasticity in her doctoral program because it was clear that the part of her brain that is devoted to visual processing had been set aside. For her, this sector of the brain is now providing functions related to memory for the spoken word. We know that people can shift many cortical functions over time.

However, Mitch bringing up is something quite different. If a person has grown up in a state of threat, then are portions of the brain used for other functions suddenly set aside? And what do you do if portions of your brain are now more occupied with determining a threat? When you say that you're consumed in discovering threat, then it could literally be the case that more portions of your brain are now allocated to the threat assessments. So, you become terrific at identifying all sorts of threats.

And you become trigger-happy regarding threat appraisal. Some of those threat assessments are appropriate. Maybe you're someone who can sense a threat better than anyone else can. And so, you're saving lives, but it's also a case that you're loaded with threat. Your brain is now saturated with the capacities and mechanisms involved with threat. So, it's interesting to think

about neuroplasticity and its relationship to threat as we're talking about it.

It's also important to mention that when we're in a condition of threat, the HPA axis is activated. As a result, the executive functioning of the brain is often not very acute. Effective decision-making becomes nil at best for a lot of those folks who continually live in a threat state. So, whether neuroplasticity plays a part in terms of more allocation, there is the matter of intensity. We relive the threat and relive it and relive it. As a result, our brain will reenact reactions to the threat—whether it's actually happening or not. Allostatic (and polystatic) predictions are in place and influencing both physiological reactions and behaviors, regardless of the threat's validity.

It is also important to consider that the links of many parts of the brain to the prefrontal suddenly become weaker under conditions of prolonged threat. We end up believing that we don't need that prefrontal anymore, because we've got a limbic system to rely on and are now in the "habit" of offering limbic responses to everything. The functions provided by the prefrontal brain can literally dry up.

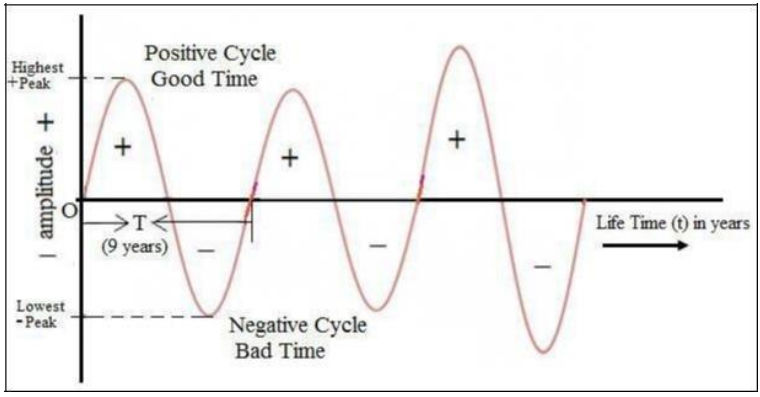
When does the brain curate and diminish some functions? This is a critical question. Our brain does most of this during very early childhood. A huge amount of brain-reorganization occurs during those first two years of life. There may be serious vulnerabilities during the pre-language phase, where there's no language connected to the trauma. As Mitch brought up, we often have a narrative, but even in the pre-narrative period, how does a person get out of that if they've been traumatized during those very early phases?

Trauma is very important and very impactful. Most people associate trauma with physical harm. They rarely consider these other dimensions of trauma. Our concepts of threat seem to provide a malleable framework for discussion of this critical issue.

fascinating topic. This topic inevitably involves several areas of neurobiology, neurophysiology, and neurochemistry. On the one hand, it also involves such psychosocial issues as adverse childhood experiences and adaptation to threat. On the other hand, it involves both types of fun and Flow. We have considered ways in which experiences in our life can be considered a threat and ways they can be considered a challenge.

The Sine Wave of Life

Many of us learned about Sine Waves in school, often in reference to sound waves or light waves and electricity—depending on the length of the wave energy might make sound or light or electricity travel across space. This is pretty cool stuff, yet we seldom learned about how many biological, emotional, and psychological aspects of our lives also follow this wave pattern.



Long ago an ancient Buddhist narrative tells the story of the sine wave in human life. We are introduced to a small farm family in a village. There is a father, a mother, and a young-adult son. One day, a horse wanders onto their farm, and no one else claims it. The other villagers comment, "You are a fortunate family, having this horse makes you the richest family in the village." The

mother, perhaps wiser than her village friends, simply shrugs and says, "Maybe yes, maybe no, we will see."

The next day, the son is riding the horse. He is thrown to the ground, fracturing his leg. Losing his ability to work is a serious blow to the family's fortune. The mother's village friends comment, "Such bad fortune for you, you may starve after this terrible event." The mother, once again, shrugs and says, "Maybe yes, maybe no, we will see."

The following day, soldiers enter the village. They are at war with a neighboring realm and searching for able-bodied young men to join the fight. They pass over the son who is laid up with his broken leg. "Ah, say the villagers, your family is so fortunate; we have lost our sons to war while yours can heal and help you survive this terrible war." Mother responds, "Maybe yes, maybe no, we will see."

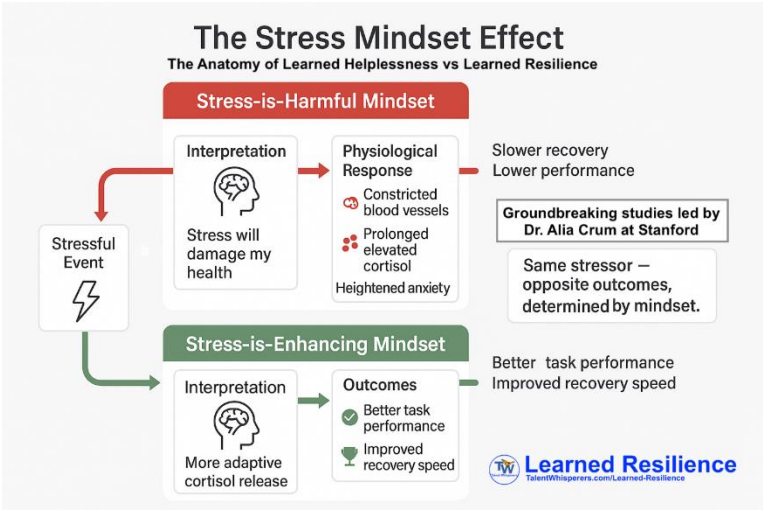
So, over the span of a few days, we have seen our little family rise up the sine wave to the peak of fortune and fall to the depths of misfortune, and rise again, etc. The mother remains curious about events, while the villagers represent certainty and misattribution of their current state to "fortune" or "luck." While our lives move upward and downward, we are all subject to misattributing why things are happening the way they are happening. It all depends on our attitude toward life. What is our mindset when we identify stressful events as "disabling" or "enhancing" of our life. Our mindset can influence how we experience these ups and downs.

Mindsets

Crum et al (2014) found that our mindset often determines how we will experience stressful events. She and her colleagues bifurcate mind-set into "Stress-debilitating" and "Stress-enhancing", finding that those with stress-debilitating mind-set experience the same stressor as those with stress-enhancing, yet have very different neurobiological responses to that stress.

Stress-debilitating mindsets have larger boosts in sustained cortisol levels and adrenaline release, while stress-enhancing folks experience small, short-lived boosts in cortisol and limited adrenal stimulation. One might conjecture that our Villagers are exhibiting a stress-debilitating mindset. The mother is exhibiting a stress-enhancing mindset. Or at least a stress-curious mindset, which keeps her open to exploring the meaning over time, rather than making an immediate judgment about the nature of events.

Learned resilience ™ is a company that provides guidance on ways to move toward a stress-enhanced mindset. It provides this helpful Infographic summarizing Crum's work (Crum, et. al, 2014).



This powerful image of the same stressful event having very different outcomes demonstrates ways for us to navigate the inevitable sine waves/ups-and-downs in our lives with more curiosity, more resilience, and faster recoveries from these often-turbulent experiences.

The Sinodal Body

We also have pretty strong examples of sine wave actions in our minds and bodies that warrant some exploration. The following are common examples of biological, emotional, and psychological sine wave processes in our minds and bodies:

Heart beats: Variability in heart rate is quite high when we are young and tends to diminish with age yet continues to demonstrate ups-and-downs throughout the day and night.

Breathing: Our breath goes out, then in, then out, up and down 10-12 times per minute. The rate and amplitude will vary a great deal based on our level of exertion, yet the sine wave nature of breathing is quite predictable.

Blood Pressure: We are assigned stable numbers for our blood pressure, yet it fluctuates throughout the day and night.

Cell Regulation: There is a natural ebb-and-flow of hormones, proteins, and waste materials in and out of our cells throughout the day. These ebbs and flows are measurable in the oscillation of our body temperature, our sleep-wake cycles, hormone release, and our alertness cycles.

Menstrual Cycles: The fluctuation of hormones, estrogen and progesterone lead to a crescendo of uterine lining thickness, followed by a drop in progesterone that leads to breakdown of the lining and bleeding we call menstruation. Although the hormone levels themselves fluctuate throughout the month, the overarching sine wave of menstruation follows a 28-day lunar cycle for most reproductive-age women.

Thus, sine waves are acting within and beyond our minds and bodies on a regular basis. How we attribute causality or contribution to our current state within the sine wave can have major impacts on our health and well-being. It is very common for us, like the villagers, to misattribute the meaning of our current state and the general sense of the cause, such as good

fortune, ill-fortune, and luck. There are essentially three loci of attribution. Self, other, and "fortune" or "God's will," depending on your underlying belief systems. Let's take a look at how these attributions can impact us when rolling up and down our life's sine waves.

Peaks and Troughs

There are moments in our life that are very positive, pleasurable, or rewarding. Flow happens in our life. We enter thresholds that balance challenge and support. If we tend to attribute these moments and this Flow to ourselves, then we congratulate ourselves, yet may find a rise in anxiety and worry that soon this Peak state will be lost. We might become vigilant in hanging on to the moment and try to maintain the state well beyond its natural occurrence.

If we have a tendency to assign blame to others when things start moving downward, we might blame family, friends, or co-workers as we begin to slide downward toward sadness and nostalgia for our fleeting Peak moment. If we tend to attribute Peak moments to others, then we give ourselves little credit and might become clingy toward the person to whom we attribute our Peak moment. Their lack of attention might lead us to blame them as we go downward, or we might blame ourselves for failing to maintain the vital relationship that brought us this amazing Peak moment.

In a sinusoidal world, there are both peaks and troughs. They both have their disadvantages

Peak moment: Self-attribution might lead to arrogance and relationship breakdown. Other-attribution might lead to co-dependence and relationship breakdown. Attribution to "good fortune" or a higher power might lead to gratitude.

Trough moment: Self-attribution might lead to self-blame and despair. Alternative attributions might lead to the blaming of

other people, and to victimhood and resentment. Attribution to "bad fortune" or a higher power might create a similar path of powerlessness that leads to victimhood and anger toward God or the higher power. An external locus of control prevails, and we feel both helpless and hopeless.

Polarized thinking and over-attribution to self or others likely increase perfectionism, hypervigilance, and risk of vilification or victimization, which can pull us into the dreaded Drama Triangle: Victim, Villain, Rescuer. This drama-engaging narrative is very natural to our human condition; however, it moves us to a paralyzing sense of entitlement and victimhood. Or it drives us toward blaming others.

We may be trying to rescue other people who we perceive to be victims like us. We are entrenching the players (ourselves and others) in a downward spiral of despair, anger, and inaction. This spiral inhibits our capacity to recognize the nuance of our situation.

We are frozen in place, unable to explore the many other factors that contribute to the direction of our lives at any one moment in time. By stepping back and allowing our curiosity to explore the situation without coming to the certainty of blaming ourselves or others, we can begin to move toward a healthier and more adaptive narrative.

This narrative is called the Empowerment Dynamic. Roles are shifted in this way:

Victim → Learner or Creator

Villain → Challenger

Rescuer → Coach

This is a higher-performance dynamic that shifts us toward curiosity, exploration, learning, and growth, and away from stagnation, victimhood, co-dependence, and blame. It may be the key elements for shifting from a "Stress-Debilitating" to a

"Stress-Enhancing" mindset. This shift promotes healthier, more balanced neural networks, such as those between the Amygdala (site of emotional processing), the Posterior Pituitary System (that secretes hormones like Oxytocin), and the Prefrontal Cortex (engaging in Executive functioning). A balanced network, in turn, enables us to engage in more socially "intelligent" behavior and make wiser decisions in the face of life's ups and downs.

Cultivating curiosity may be essential to making this shift. We witness this in the life and career of both Caroline and Cynthia Portman. Steven Bloor also came around to this state late in his career. We are born exceptionally curious, with a keen preference for novelty over familiarity through infancy into early adolescence (White, 1959). Furthermore, infants with a higher preference for novelty perform more effectively in later school and academic settings, indicating a key element of novelty-preference in the steepness of our learning curve in life.

Unfortunately, as we age, most of us are inclined to select experiences with which we are quite familiar. We want to assimilate well-worn information rather than accommodate new information. Somewhere during early adulthood, we often appear to lose our preference for novelty. Beginning in our 30's, we typically prefer the more predictable and familiar over the more uncertain and novel.

Perhaps cultivating more novelty preference and curiosity later in life could continue to enhance our capacity for second-order learning and for both slow (Kahneman, 2011) and reflective (Schön, 1983) thought. A curious mindset and openness to alternative life outcomes, such as was exhibited by the mother in our village tale, can shift us toward a stress-enhancing mindset. We can flourish rather than suffer through the inevitable ups and downs of life in our later stages of life.

Conclusions

While the title of this section suggests a psychological appeal to sustained health, much of what we have considered in this chapter and other chapters in this section of the book involves an intimate interweaving of the mind and body, as well as a heavy dose of interpersonal connectedness. We engage our body and mind, on a daily basis, in the challenges of up-and-down life, seeking out the balancing support to be found in a social setting of family, neighborhood, and society.

As we shall see in presenting the next four sections of this book, the interweaving continues. Salus-P3 inherently embraces a biopsychosocial perspective. Salus-oriented practices (both medical and nonmedical) ensure sustained health only because they are based on a systemic foundation of organizational engagements. Institutional and societal engagements are explored in Volume Two, along with leadership on the part of all healthcare professionals. Especially physicians.

Chapter Nine

Salus Perspectives, Policies and Practices

A powerful feedback loop is often engaged. We're threatened by the prospect of a threat, and we're challenged by the opportunity of a challenge. So, we say to ourselves: “Oh my god, I'm about to be in a place where I'm going to be overwhelmed!” And it's self-fulfilling when we anticipate what is about to happen. It becomes just the fear of being overwhelmed, not fear of the event itself.

Type one fun is like having a birthday cake. Everybody sings happy birthday to you, and you get to eat chocolate cake, and it's really fun. But then there's this type two fun that is like running a marathon, where it's painful, or being on a roller coaster, or seeing a scary movie, where it's really frightening, and it activates you.

Afterward, it's like, wow, that was really fun. And this relates to the notion of allostasis and ongoing assessments and biological alterations. Is this a threat? Or is this a challenge? Is this type one fun, where it really feels good? Or is this type two fun, where it's painful at the time, but afterward it feels good?

The intersection between trauma and the perception of agency is critical. We're all aware of the evidence that we often don't believe we have much agency in our life. However, the perception of agency seems critical if we are to confront our mid-21st century challenges.

It is fully understandable that one would be resilient if this person had strong attachments during their childhood and into adulthood. They can relish the prospect of finding fun in many activities, even those that come with a moment of fright or challenge. The more intriguing matter of resilience concerns those people who grow up in a very hostile environment during the first two years of life. There's absolutely no way they're going to have a fulfilling life, yet they somehow do have a successful life. What's that about?

Oxytocin is involved when we are considering type one fun. What about type two fun? Does it end up with oxytocin, or is there something a bit different at the end of a fun-filled type two episode? There must be some adrenaline in type two fun. Furthermore, type one might be more closely related to dopamine rather than oxytocin. How then would that play a part in the choice between threat and challenge?

You can get addicted to your own adrenaline. You end up with people who are hooked on their own adrenaline. They need type two fun all the time. They need to keep pumping up—especially if they're at work. So, you have people who generate crises at work precisely so they can deal with the challenge.

Mihaly Csikszentmihalyi writes of something he calls a "flow state." This state exists in the threshold we experience when

engaged in an activity that resides between a state of boredom and a state of anxiety. We may be entering a flow state when engaged in type one or type two fun.

When we're in a condition of threat, the HPA axis is activated. As a result, the executive functioning of the brain is often not very acute. Effective decision-making becomes nil at best for many of those folks who continually live in a state of threat. Links of many parts of the brain to the prefrontal cortex suddenly become weaker under conditions of prolonged threat. We end up believing that we don't need that prefrontal anymore, because we've got a limbic system on which to rely. We are now in the "habit" of offering limbic responses to everything. The functions provided by the prefrontal brain can literally dry up.

Sine waves are acting within and beyond our minds and bodies on a regular basis. While our lives move upward and downward, we are all subject to misattributing why things are happening and the way they are happening. It is very common for us to misattribute the meaning of our current state and the general sense of the cause, such as good fortune, ill-fortune, and luck. Depending on our attitude toward life, our mindset of seeing stressful events as either "disabling" or "enhancing" of our life can influence how we experience these ups and downs. How we attribute causality or contribution to our current state within the sine wave can have major impacts on our health and well-being.

Polarized thinking and over-attribution to self or others likely increase perfectionism, hypervigilance, and risk of vilification or victimization. This can pull us into the dreaded Drama Triangle: Victim, Villain, Rescuer. This drama-engaging narrative is very natural to our human condition. However, it puts us into either a paralyzing sense of entitlement and victimhood or drives us toward blaming others. We might also repeatedly try to rescue perceived victims, thus entrenching us as victimhood game players, in a downward spiral of despair, anger, and inaction.

Section Three
An Organizational Appeal to Good Health

Chapter Ten

Delivering Health Care in Complex Adaptive Systems I: The Nature of Dynamic Systems

Dr. Dorothy Wellington

Caroline and Dr. Bloor have both offered their stories about health and health delivery. It's now time for me to share a bit about my own pathway to healthcare. I began my career like most Family Physicians in the 1990's, working and caring for patients in a wide array of settings – something we family physicians call full-spectrum family medicine. I was delivering babies, helping out in the operating room, caring for patients in both the hospital and office setting, and on-call many nights for after-hours events and questions by my patients.

Over the first 5 years of my career, I began to realize I was getting stretched too thin and needed to focus more of my time and career on being a great family physician in clinic. So, I settled into a local group practice alongside fellow family physicians, internal medicine, and pediatric doctors. I continued to take care of pre-natal patients but slowly let go of delivering babies, sending my pregnant moms to a local family physician friend of mine who worked full-time in labor and delivery. I stopped rounding in the hospital as the demands for my office practice constantly grew, and the time I had for visits shrunk. All-in-all it was pretty satisfying, more focused, and allowed me to pull out of doing call and deliveries, so I settled into my marriage and began to enjoy my family time more.

About 5 years into my more focused, satisfying career, the electronic record was introduced into our practice. Our administrators promised it would be "business as usual" a couple of months into the transition, but a year in I was still spending way too much time completing electronic forms, responding to in-basket messages, and writing notes that seemed to require more and more information to assure proper billing. Rather than reducing paperwork, it accelerated and concentrated paperwork on

we physicians. In the pre-electronic record era, I could ask my Medical Assistant to do many activities on my behalf. After the electronic record, only my own signature could move things along. All things began to route directly to me, and others were no longer "authorized" to take care of things, call patients, handle all the questions and needs that pop up between visits.

I'm no Luddite, so I embraced the shift and found the ability to read specialists' notes, hospital notes, and the like in real-time, follow complex lab test results over time, and communicate with all the members of the healthcare team – well, those things were great. But the burden of writing was well beyond what it had been pre-electronic. I was spending 2-3 hours a night at home "finishing my notes," also known as "pajama rounding." I started to find myself grumpy with my husband and kids when they interrupted my note-writing. Wait a minute, how did work get so far into my home life? What began as a slow frustration eventually broke out into a full-fledged anger as my visit time with patients shrank and my visit time with the computer grew.

Some estimate that we primary care physicians spend 40% of our time engaging with a computer – more time than we spend directly meeting with patients. So, I had given up hospital work, the operating room, and delivering babies, only to substitute that time now with a computer tapping in my notes. I also noticed I wasn't making eye contact with my patients anymore. I was spending too much time and focus on trying to get my notes done while I was with them. Patients began to complain that I wasn't as friendly or welcoming as I used to be, that the visits were too short, that they didn't feel safe telling me things while I typed on a computer---wondering if their health plan or boss might have access to my notes.

Dr. Wellington is an amalgam of many physicians we have known and with whom we have worked. The challenges she was facing in her career as a physician are well known to us. As members of the contemporary healthcare system, we confront challenges similar to those faced by our hypothetical Dr. Wellington. We all face a major Salus-based challenge in seeking to lead complex

mid-21st Century organizations—and this is particularly a challenge regarding health care organizations and systems.

Working in a Challenged Health Care System

Back in 2013, Elizabeth Bradley and Lauren Taylor (Bradley and Taylor, 2013, p. 8) offered their own portrait of a fragmented perspective on the poor performance and high costs of American health care:

> Historians, health services researchers, health policy scholars, and political leaders have devised a number of rationalizations for America's mediocre-to-poor performance, usually linked with proposed reforms intended to provide people with greater access or have people pay less for care. Many have attributed the failures of health care in delivering better outcomes at lower costs to several facets of the current approach. First, some have suggested that underinsurance has resulted in poor prevention and inadequate adherence to medical recommendations. Second, blame has been placed on fragmentation between public and private payers and inadequate primary care with fee-for-service arrangements that can result in unnecessary duplication and inefficiencies. (Fewer than 15 percent of all physicians practicing in the United States are primary care physicians and the remainder are specialists of some kind, despite evidence that areas "with more primary care resources per capita have better health on many measures, including lower premature mortality.")

Bradley and Taylor (2013, pp. 8-9) identify two more versions of the costly American healthcare elephant:

> Third, many have suggested that fears of medical malpractice compel physicians to screen for every

> conceivable disease and use the most aggressive treatment available, lest they be sued for not doing everything. Fourth, experts have cited cultural demands for the most sophisticated medical technology as the main driver of cost. For the last twenty years, policymakers and practitioners have sought to address these problematic features in the health care system, but without success in delivering the same level of health per dollar found in other industrialized countries.

The view doesn't seem to have improved much over the subsequent years (even after the Affordable Care Act was enacted). In 2018, Elisabeth Rosenthal (Rosenthal, 2018, p. 238) provided an equally disturbing portrait in her best-selling book, *An American Sickness*:

> [The US healthcare system has] gradually evolved sector by sector, hospital by hospital, doctor by doctor. What the players are doing is, technically speaking, perfectly legal. Participants in the marketplace respond to the incentives and opportunities a market allows. That's what they're supposed to do. Each component of the system is genuinely convinced that it's not so bad, nor responsible for our $3 trillion medical bill. Someone else is more to blame.

Rosenthal (2018, p. 238) broadens her portrait of fragmented dysfunction beyond the walls of the physician's office and the American hospital system

> Drug spending is only 10 percent of the national health budget! Nursing homes are only responsible for 5 percent of health costs! Payments to doctors only 20 percent! Dermatology accounts for only 4 percent of Medicare expenditures! Each segment of our medical system is convinced that its charges are reasonable. But put all the little excesses together and you get healthcare that is

much worse and much costlier than the sum of its parts. We, the patients, are stuck in the middle, and it seems we've reached critical condition.

What about today? Is it any better almost a decade later? Our Salus Forum participants don't think so. It seems that many healthcare leaders still convert complex dilemmas into simple puzzles. When they do so, they find that no matter how they solve the puzzle, a new puzzle pops up and undermines their progress. As Dr. Wellington noted, befuddled leaders are replicating the old Sufi story of the wise people and the Elephant. The "wise" people are blind. And they are relying on their touch when seeking to determine the identity of what they are touching. "It's a rope", "It's a horn", "It's a tree". The label given depends on where they happen to be standing by the elephant, and which part of the elephant they touch.

As in the past, some of the "wise" leaders of contemporary American health care (and most other health care systems in the world) declare that the problem is burdensome governmental regulations. Others declare that the elephant-of-dysfunction is actually protective diagnoses (based on fear of lawsuits). Among those who are particularly fearful of or disdainful of the elephant's presence in their life, the problem is uncontrolled costs or the transformation of human-service-oriented health care into a for-profit enterprise. The elephant seems to be in control, regardless of the way it is seen and defined. And given the elephant's large size, there is widespread fear that it will trample everything inside and outside the health care sector.

Another wise narrative is centered on an African creator story. This story concerns polarities. The God of the realm decides to wear a hat, Red on the right side and Blue on the left. He gracefully glides between two tribes, one on the right, one on the left. "Our God wears a Red hat," the ones on the right declare. "Our God wears a blue hat!" shouts the other tribe. The tribes begin wearing the hats of the appropriate color, and soon there

are skirmishes, eventually raids, and then full-on warfare to prove which God is superior. This God, of course, has a humorous streak. So, just before the war starts, he walks the other direction, thus reversing the colors. Confused and perhaps even baffled, both sides decide to cease their warfare and create a co-council of wise men to study the Gods together.

The elephant is clearly present in mid-21st Century health care. Furthermore, there is warfare (sometimes clearly present) among the various constituencies that view the elephant in diverging ways. Divergent perspectives have widened, and polarities exist regarding the color of the health care hat. There are even green, yellow, brown, purple, and occasionally white hats to complement the red and blue hats and to further confuse the situation. The Gods have indeed been mischievous, and those who dwell in or are served by the health care community have not found a way to cease their warfare and create a co-council.

In this chapter, our Salus-P3 task is to make sense of the multiple ways in which to view the health care elephant and in which to bring people together to help tether the elephant and make it more caring and effective in addressing contemporary health care needs. We will seek to make sense of the differences between puzzles and problems. Our attention will be directed to the nature and dynamics of polarities in health care.

Of greatest importance will be our Salus-P3 attempt to unweave the Gordian knot that is to be found in what has recently been described as complex, adaptive systems (Miller and Page, 2007). It is this type of system that is predominant in and often dominates mid-21st-century health care organizations. We believe that the concept of "emergence" helps to explain the nature and dynamics of these systems, and that these systems can only be effectively led and managed when this leadership and management is being engaged in a team setting. Hopefully, Dorothy Wellington is taking notes. She has the opportunity to be innovative not only in her clinical practice but also in guiding her

healthcare organization through the challenges of mid-21st-century life.

What Are Complex Adaptive Systems?

We begin to answer this fundamental question by turning to the writing of John Miller and Scott Page, who directly address this question in their book, appropriately titled *Complex Adaptive Systems*. (Miller and Page, 2007). In offering their answer, we should first note that they are primarily interested in social (human) systems. We are fine with this focus, given that health care systems are decidedly social. Very few systems are more dependent on social interaction between people than those systems that deliver health care.

The key point to be made by Miller and Page (2007, p. 9) regarding complex adaptive systems is that they are complex--and not just complicated.

> We are surrounded by complicated social worlds. These worlds are composed of multitudes of incommensurate elements, which often make them hard to navigate and, ultimately, difficult to understand. We would, however, like to make a distinction between complicated worlds and complex ones. In a complicated world, the various elements that make up the system maintain a degree of independence from one another. Thus, removing one such element (which reduces the level of complication) does not fundamentally alter the system's behavior apart from that which directly resulted from the piece that was removed. Complexity arises when the dependencies among the elements become important. In such a system, removing one such element destroys system behavior to an extent that goes well beyond what is embodied by the particular element that is removed.

Based on this distinction, we can state that a complex adaptive system (at least as found in a social setting) is composed of numerous elements that are tightly interwoven. They are interdependent and operate in close proximity to one another. It should be noted that this proximity allows a complex adaptive system to operate without heavy oversight or control. Each part looks to the one next to it for direction, thus eliminating the need for traditionally valued hierarchical control. The system is adaptive precisely because each part of the system can sense the need for change and can help to direct this change, as is the case among flocking birds.

Flocking

For many years, those who observe the behavior of birds tried to discover how birds so beautifully flock. The tight coordination of rapid movement among many birds must mean that a very clever and powerful bird is "in charge" and is choreographing the complex flocking. This remarkable leader was never discovered. It seems that birds flock without any one bird being in charge. Rather, each bird moves in coordination with the bird(s) right next to them.

A bird at the outskirts of the flock notices a hawk swooping in and engages in diversionary action. The neighboring birds follow suit. Quickly, the entire flock is taking this diversionary action. If the birds were operating through a hierarchy, then information about the incoming hawk would be relayed through a set of channels to the lead bird, who would then send out a message to all birds in the flock about the diversionary action to take so that the hawk can be avoided. By this time, the hawk would have already hit the birds at the edge of the flock. Delay caused by multi-step communication in the hierarchical structure would reduce the agility of the flock and lead to its vulnerability.

This startling finding regarding the absence of hierarchy among flocking birds soon expanded to the study of many other animals

that operate in herds (e.g. Bison), schools (e.g. fish), and other forms of clustering and swarming. Apparently, hierarchical control is rarely found among these animals. In fact, hierarchical control is rarely adaptive in social systems. Furthermore, those who study complex systems find that they are LEAST amenable to hierarchical control is they are large and complex—such as human corporations and most health care systems. We must study and appreciate complex adaptive systems precisely because they point us in directions that lead us away from hierarchy.

Feedback and Delay

The first, fundamental building block in any description of complex adaptive systems concerns the feedback that occurs among components of this system. We refer to each component as an "agent." An agent, in turn, can be a person, an organization, or a specific event. Feedback specifically concerns the influence that a specific agent in a system has over other agents in the system. This influence typically is engaged through the flow of information (though it can take place through the physical impact of one agent on another agent – the "billiard ball" metaphor is appropriate in this regard).

Feedback can be either positive or negative. These terms don't refer to the "goodness" of the feedback. Rather, they refer to the nature of influence that the feedback has on the second agent. Positive feedback means that the second agent is more likely to perform in a particular manner as a result of the influence. Negative feedback means that the second agent is less likely to perform in a particular manner as a result of the influence.

The critical factor to note is that a complex adaptive system will only endure if it contains both positive and negative feedback relationships between agents operating within this system. A system with only positive feedback relationships between its agents will soon explode from the exponential growth and pace of action within the system. Or this system will collapse as all of

its resources are exhausted as a result of its unbridled growth. Some negative feedback is needed to apply breaks and corrections.

Conversely, a system with only negative feedback relationships will die quickly. It is smothered in negativity and a lack of sustained energy. Some positive feedback relationships are needed in order to provide both direction and energy. It usually takes only a bit of negative feedback to keep a system operating in a reasonable, sustainable manner; however, quite a bit of positive feedback is usually needed to launch and sustain a system, especially if it is large and complex (think of the energy needed to launch a rocket heading into space).

One other feedback-related feature is critical to any full appreciation for the dynamic operation of complex adaptive systems. This feature is the Delay that occurs between the provision of the feedback and its receipt. Wars have been engaged and lost as a result of delays in the transmission of information (as well as supplies). At a more mundane level, we find that delays in the receipt of information regarding customer needs or even inventory can damage the operations of a retail store.

Similarly, delays in feedback regarding rates of tax revenues can incapacitate a government's capacity to plan for the initiation of specific human service programs. Even more important is the pattern or response to delays that can occur in a system. If there are major delays, then there are likely to be major swings (oscillations) in the size of a retail store's inventory or the government's quantity (and quality) of human services.

Some of those who study complex systems—adaptive and otherwise—believe that delays in a system account for more of its unique features than either the size or type (positive or negative) of feedback operating in this system. As an architect of system dynamics concepts, Donella Meadows (2008, pp. 151-152) concluded that:

> Delays in feedback loops are critical determinants of system behavior. . . Delays that are too short cause overreaction, "chasing your tail" oscillations amplified by the jumpiness of the response. Delays that are too long cause damped, sustained, or exploding oscillations, depending on how much too long. Overlong delays in a system with a threshold, a danger point, a range past which irreversible damage can occur, cause overshoot and collapse.

As Meadows has noted, there are systems in which delays are very short. The feedback is proximal (neighborly) with agents working closely together. Elements of the system are tightly coupled. Each element reacts immediately to the actions taken by a neighboring element. Such is the case with Dorothy Wellington's clinic and most other small organizations. We also observe this occurring in the flocking of birds. Tightly coupled agents (such as birds) work with minimal delays. They can be quite agile in their response to outside challenges—but can also be quite jumpy ("trigger-happy") as Meadows observes. Dorothy should take note of this potential dynamic in her clinic.

Other systems can operate with major delays in the flow of information and either positive or negative feedback. The agents operating in these systems are loosely coupled. The feedback is distal (foreign), and this system runs the risk of responding too late, with too little effort, and in the wrong direction to an impending challenge.

It is important, in conclusion, to suggest that failure to recognize and appreciate the function of delay operating in virtually all complex systems typically results in actions that yield results which are quite different from what was desired and anticipated. Often, a set of "counter-intuitive" steps must be taken to produce the desired results. As Jay Forrester (the initial architect of system dynamics) has often proposed: "Don't just do something, stand

there!" In other words, seek to carefully understand the dynamics operating in a complex system before trying to change it.

Complexity and Complication

With this brief foray into flocking, feedback, and system delay, we are ready to introduce a key feature of complex adaptive systems that helps us understand the unique features of these systems. This feature involves a distinction that Miller and Page (2007, p. 9) draw between systems that are complicated and those that are complex:

> Complexity is a deep property of a system, whereas complication is not. A complex system dies when an element is removed, but complicated ones continue to live on, albeit slightly compromised. Removing a seat from a car makes it less complicated; removing the timing belt makes it less complex (and useless). Complicated worlds are reducible, whereas complex ones are not.

While a complex system would seem to be less robust than a complicated system, Miller and Page (2007, p. 9) argue that this is not the case. In making the case for the adaptive capacity of complex systems, they point the way to the two factors we are focusing on in this chapter: emergence and teamwork.

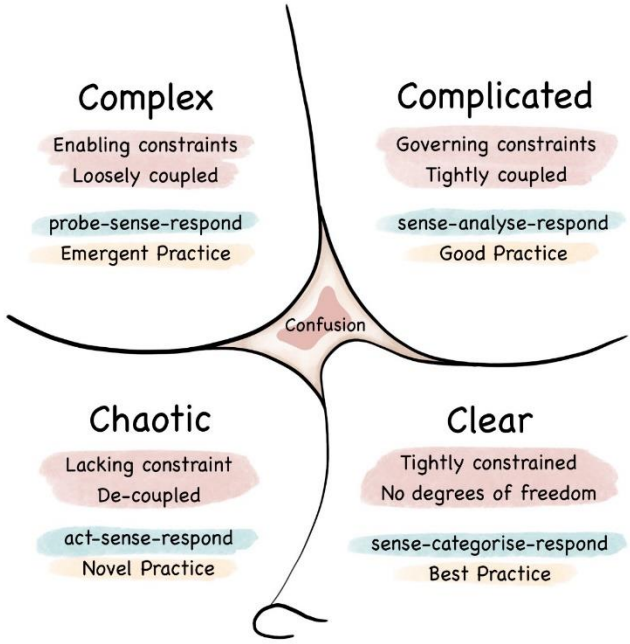
> While complex systems can be fragile, they can also exhibit an unusual degree of robustness to less radical changes in their component parts The behavior of many complex systems emerges from the activities of lower-level components. Typically, this emergence is the result of a very powerful organizing force that can overcome a variety of changes to the lower level components.

It is in the dramatic and often unanticipated emergence of new forms when separate parts are brought together that complexity gains its adaptive reliance. Furthermore, it is through the dynamic and constructive interaction of people as members of a team that

the separate parts are brought together and effectively integrated in the newly emerging form of this social system.

The Snowden Cynefin Framework

David Snowden (2023) offers a model that provides a further distinction among various kinds of complex adaptive systems. Snowden's Cynefin Framework consists of four fluid and interrelated states. In his framework, an organization is challenged to recognize and adapt whether addressing a clear, tightly constrained organizational environment or shifting into a highly complex and ultimately chaotic state:



Individually, we prefer comfort, predictability, and safety. As a result, we find ourselves in constant pursuit of the state that Snowden labels Clear.

Clear Systems

In this state, rules are clear, roles are clear, there are severe constraints on degrees of freedom. Feedback is close and immediate—proximal in nature. We often create this organizational environment. Sports & games likely present the clearest example of a Clear system or organizational environment, especially games involving only 2 people, such as chess.

In the realm of chess, there are clear rules about each piece's ability to move. The board is static and remains stable throughout the game. Each player may only make 1 move at a time, then must wait for the move of the other. In order to reduce the risk of fatigue on player capacity, moves must be made within a certain timeframe.

Proper lighting must be available in order to establish sufficient trust and clarity of the move. The feedback is proximal. Given the imposed timeframe, we can see immediately how our opponent responds to our move, though there are important sources of feedback that are distal (regarding time) as we eventually discover how our overall strategy worked in determining the outcome of the game.

Chess masters can recognize move patterns in a very advanced fashion based on playing and rehearsing thousands of moves. They shrink the distal time frame, bringing the future into the present. The advantage held by a chess master in shrinking the timeframe is primarily a matter of pattern recognition. This recognition is, in turn, based on experience and prolific recall of chess move patterns. It seems that the future is brought into the present through engagement of the past (retrieving and incorporating the history of previous games).

It is no surprise, then, that a more capable memory machine that could be provided with clear rules and copies of every chess move ever made in history would be able to compete and eventually surpass all human beings. When that event happened in May of

1997, when IBM's Deep Blue defeated World Chess Champion Gary Kasparov, the world began to question whether computers would surpass humans in all games, all sports, all professions. Certainly, that has proven true in simple, clear, well-defined, stable, static, highly constrained games---in that quadrant humans are being surpassed and replaced by more capable computers and artificial intelligence.

Complicated Systems

When we move into the quadrant of Complicated, we move from very strict rules and minimal degree of freedom toward more generalized governing constraints and tight coupling. Serial processes must often occur in a certain order if they are to be completed. While multiple pathways are available, there is usually only one that is of optimal value and most likely to lead to success. The feedback might not be proximal—we might not know if we have taken the best pathway for a while. However, the ultimate distal feedback is quite clear. We have been successful or unsuccessful. Serial, interlocking decision-nodes must be sorted through carefully by the players of these games and sports if they are to be successful.

One can imagine a relay race taking place during a track meet. One phase of this race involves a tightly coupled interaction in passing the baton. In this case, not only does each runner have to run as fast as possible in the right direction, the runner must also ready the baton at just the right time and in the exact space designated by the sport to hand over to another runner who must be reaching a similar speed at just the right moment without leaving the baton-passing zone. These tightly coupled transitions must occur 3 times for the relay race to be completed and in the right order. Thus, relay races are complicated. We have all seen events in which the most talented, speedy team fails to pass the baton efficiently or even drops the baton, and all is lost.

Complicated games do not transition so well as clear games (such as chess) to a virtual reality, although many of the quest-like games often require challenging and tight coupling when introducing a Boss who must be defeated to move to the next stage of the game.

Thus, single-player, serial, complicated virtual games likely allow a non-human to complete the game more successfully than a human. However, in real-world complicated games like relay races, computers are faced with the near impossible task of running, which involves highly complicated multi-agent (body parts) that interplay with one another.

Computers struggle mightily with this level of complexity. As a result, we see mixed results in Palmer's Complicated quadrant depending on the context and nature of the game, activity, or task in which humans and computers can sometimes battle. The outcomes are less predictable than we have seen with clear, simple games, activities, and tasks. The distal feedback is much harder to discern while the game is underway. The baton can be dropped. A new agent can enter the game and "mess" everything up.

Complex Systems

As we move from complicated to complexity, we shift from a highly static, stable, and predictable environment or context into a complex one. This environment is filled with dynamic and interdependent movements of multiple agents across an often-fluid environment.

Feedback is not only delayed (distal), but also often confusing or even contradictory. Interactions become more loosely coupled, and there are more degrees of freedom with enabling constraints. What are enabling constraints? This sounds paradoxical. Are they enabling more freedom or are they constraining freedom? As often is the case, both can be true.

We would suggest that Dorothy's clinic is complex. As a small organization, one would assume that it is clear or perhaps complicated. However, with all of the interlocking clinical treatments that she has to offer, the operations of her clinic are likely to be challenging and demanding of coordination. Dorothy might find a definition of enabling constraints to be helpful (Juarrero, 2017):

> Enabling constraints force alignment of the agents which leads to resonance. This, in turn, creates a higher order system. The higher order system provides feedback to the agents which constrains their behavior and stabilizes the higher order system Rather than direct control of a rule, enabling constraints are dynamic and sometimes fluid, yet lead to alignment of agents and bring the possibility of agent-resonance, creating a higher-order system.

A metaphor might be of value in helping Dorothy comprehend what Juarrero has proposed. One can think of a river, with the banks of the river providing the enabling constraint that aligns all the water molecules to move in the same direction. The riverbed and gravity provide further enabling constraints that provide direction-of-flow, thus distinguishing the collection of water from a still and static lake. Three of the enabling constraints are visible and tangible---the two banks and the bed. One is invisible, that being gravity, yet as essential to the form and function of the higher-order river as we know it.

The resonance of the water often creates the sound of a rushing river. Water becomes a higher-order system, transforming water into a river. That river then begins to erode and alter the banks depending on rain, soil conditions, and other feedback factors. These erosive forces may change the direction of the river, as historically occurred with the Mississippi River. It took quite a while for humans to outsmart Mother Nature by creating new, constraining cement banks and dikes to thwart flooding and instability in the river.

We can offer Dorothy Wellington a second metaphor. A game, action or sport that is complex generally shifts into those that require continuous team-based effort and action. Moving beyond complicated baton-passing, we move into team sports such as soccer and basketball---where the players dance across a field, loosely deciding to send the ball to any other teammate or the goal at any moment. If soccer were only complicated, then each player would have to stand in line and pass only to the next. They could run in a well-demarcated zone of the field; however, they would be allowed to leave that zone or never pass when out of that zone.

Such a game, we believe, would be tedious, so the full engagement of complexity makes soccer and basketball two of the most-watched and revered sports in the world. The thought of an IBM Deep Blue taking on an entire soccer team seems a bit ridiculous, with the computer sitting stationary on the field, blinking and vibrating its powerful memory discs, requiring a long extension cord, and being in a tent if it rains. It might successfully predict the winning team in a soccer match; yet be no match for the soccer team composed of humans. Thus, in the realm of complexity in the physical realm, computers are no match for humans.

The requirement for human movement, loosely coupled, dynamic interactions of multiple agents far surpasses the computer's capacity for intricate movement and interaction. To date, no AI or computer has even attempted to form a soccer or basketball team. A collection of current-state robots would likely provide humorous entertainment—yet lose badly to a human team. It is true that in a virtual realm, a computer could take on multi-player roles and begin to outwit human teams---yet, to date, we see teams incorporating artificial intelligence to inform and guide their human teams.

There is some evidence that highly skilled experts can be outperformed by a less expert team that is using a computer AI system to assist them (what is now being called collaborative

intelligence). For example, at the University of Washington, biologists used crowds of external contributors to map the structure of an AIDS-related virus that had stumped academic and industry experts for more than 15 years. This strategy, as a variant on crowd sourcing, may become quite prevalent in future years.

It would appear, then, that in the complex quadrant, collaboration between computer-AI and human actions, games, and performance may present promising future directions, yet we do not face any immediate risk of being surpassed by computer-AI, especially in complex environments that involve complex human interactions, emotions, and social engagement, like playing soccer or team-based healthcare.

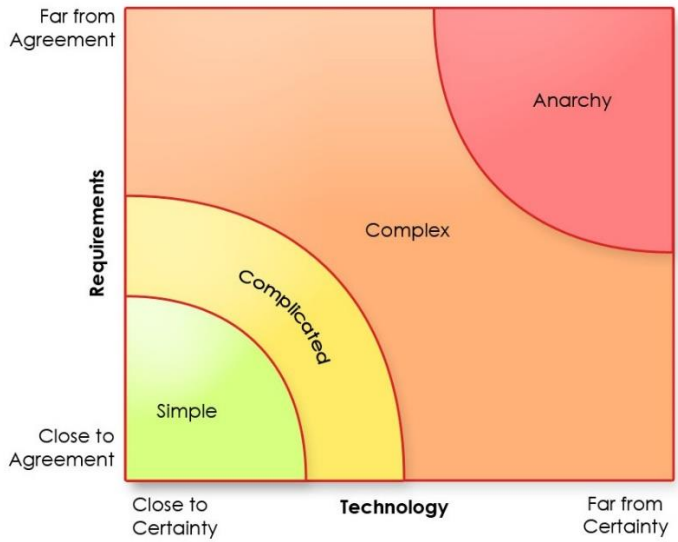
Snowden also makes clear that there is a cliff between Clear and Chaotic---that can happen suddenly due to external and internal threats or disruptions to the organization. It seems plausible as well that an organization that is acting as if it is in a Clear state, is really in a complex one and may not be appropriately adapting to that reality---and is thus thrust into Chaos which can rapidly spiral into total collapse or, if well led, an inflection point or vital re-orientation that likely will require more complexity-responsive leadership, teamwork, and actions.

The Stacey Model

Ralph Stacey (1996, p. 47) offers a second model. He is equally insightful about the human condition and the operation of complex organizational systems. Dorothy might continue to take notes. The Stacey Model offers guidance for practices related to Complex Adaptive Systems, which we will be addressing later in this chapter.

In the Stacey model, we find a chart moving from Simple to Complicated and from Complicated to Complex. Movement is along the axis of Certainty and Agreement. High certainty and

high agreement, find us in the zone of simplicity---clear rules, clear roles, certain actions and outcomes, proximal feedback.



Where does Dorothy's clinic belong? First, it is important to remember that she is offering many new healthcare procedures. Uncertainty abounds. As certainty wains we move into the zone of the complicated. However, Dorothy's clinic is small. Complicated systems require that feedback becomes more distant (in time and space) and agreement becomes more challenging.

Only then do we move into the zone of the complicated, requiring the more tightly coupled and serial decisions and actions of that zone. However, if uncertainty is dominant in Dorothy's clinic, then Stacey would suggest that feedback is going to become distant and often contradictory. Disagreement is more likely than agreement. We find ourselves (and Dorothy's clinic) potentially moving into the zone of complexity.

In a somewhat oversimplified example of healthcare, we may say the actions and decisions within an emergency room are in the

simple zone---if we narrow it down to "where does this person need to be? Home, a nursing home, this hospital, another hospital, in critical care here or somewhere else?"

When it comes to the patient's disposition, the Emergency Department can focus on simple rules and come to a high degree of certainty and agreement after an initial assessment and evaluation with laboratory and imaging data. Once the decision is made to put the patient in a specific level of care in the hospital, then things are likely to become more complicated. Several specialists might be called in to share their views on the diagnosis and provision of care.

A clear series of steps will be taken that slowly and sometimes quickly move the patient toward being released from the hospital after the passage of several days. Thus, the hospital engagement aligns well with a complicated realm. We may have some level of disagreement between doctors and administrators, or between doctors and nurses, about the best course of action.

We have ways to resolve these disagreements through meetings and rules of engagement that allow us to proceed in a serial fashion toward the inevitable discharge from the hospital. The patient's course may wax and wane, yet it is inevitable that the patient will leave the hospital at some point. At this time, decisions must be made again about where and how the patient will leave.

Once the patient leaves the hospital, ironically, things become more complex as now the primary agent, the patient, is much more engaged in the process. Family, social, housing, follow-up, and many other factors come into play. In this complex realm of uncertainty, more disagreements can arise---the patient's sister may have strong beliefs that she would not share in the more controlled hospital environment.

The patient's car may break down, so getting to follow-up visits becomes challenging. The ambulatory setting of clinics and

urgent care interfaces with patients impacted by more complexity, uncertainty, and disagreement. Care for this patient can degenerate into anarchy without the wisdom, guidance, and support of a whole team working collaboratively together. Thus, in the realm of complexity, teamwork becomes central to success, and computer-AI can be a member of the team yet not replace the team.

Is Dorothy's clinic as complex as the emergency room in a large hospital? Probably not—though a cluster of innovative practices certainly holds the potential of looking a whole lot like a wildly swirling emergency room. Complexity can manifest in various forms in contemporary healthcare. It is much more commonly found in our mid-21st-century society, where conditions of VUCA-Plus prevail (conditions to which we will soon direct our attention).

Self-Organization, Feedback, and Emergence

Complex Adaptive Systems are systems with several interdependent subunits and dynamics that often defy linear, causal descriptions and predictions. They are more ecological than rational, making them challenging to fully grasp. In the following diagram, we can begin to picture the vast interplay of a small collection of related agents.

These are called simple, self-organized local relationships---with the changing external environment, influenced by negative and positive feedback leading to emergent phenomena that ultimately shift toward adaptive behaviors. Those adaptive behaviors then begin to alter feedback loops (negative and positive) in ways that impact local self-organized relationships. New emergent phenomena appear, and the cycle continues.

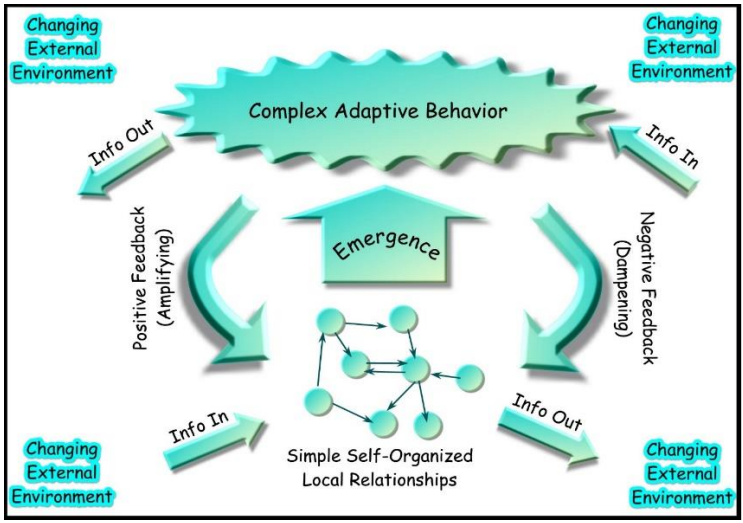


Diagram: ***The Wiki and the Blog: Toward a Complex Adaptive Intelligence Community*** D. Calvin Andrus, Ph.D. Office of Application Services Central Intelligence Agency Washington, DC 20505 calvina@ucia.gov

This living organizational dynamic can't be fully understood using a reductionistic lens---believing one can control the entire process by, for example, writing a new policy to govern behaviors within the simple self-organized local relationships---often called "frontline workers" in healthcare. In fact, much effort and expense are allocated to one single agent within the self-organizing team---the physician, hoping that leverage will alter the entire dynamic.

This belief is so strong in healthcare that physicians are inundated with efforts to give them negative feedback about "unnecessary care, labs, images, hospitalizations, procedures, medications, etc." in the form of what are called "prior authorizations," which we will discuss in detail later in this article. Attempting to get predictable outcomes from pressures on a single agent within a complex adaptive system is folly—yet it is the primary tool used by most organizational leaders in healthcare to influence behaviors, costs, utilizations, etc.

If one shifts from a reductionistic toward a wholistic lens with the Complex Adaptive System of healthcare, one begins to recognize that guiding and coaching teams of self-organized local relationships will have far more influence and impact on organizational behaviors by allowing more local control over adapting to external environmental influences.

For example, returning to our Flock of Birds metaphor, if the health care "flock" is allowed to respond to feedback with more agility and less delay, then new innovative adaptations can be tested more immediately, without waiting for official approval via the leaders. This provides the leaders with more time and ability to study emergent ideas and adaptations to find those with the most adaptive capacity. It further reduces the delay between feedback and action, thereby allowing for the ever-important self-corrective nature of healthy change.

In the case of Dorothy Wellington's clinic, the leader (Dorothy) is herself the champion of innovation and is among those most active in testing out new treatment programs. Thus, the feedback is likely to be immediate, allowing for greater agility. Once again, we come to the conclusion that Dorothy's clinic might be complex, but it also holds the distinct advantage of being agile and under complete local control. Nevertheless, navigating complexity requires a broader lens that recognizes the dynamic interplay of many agents with their local environment and the cultivation of more adaptive emergent influences on overall organizational behaviors.

This Salus-P3-aligned living systems, holistic approach encourages emergent adaptations, more team autonomy, and greater adaptive capacity. It is not risk-free, however, as some emergent adaptive behaviors may be contrary to organizational success and would then require self-corrective action. The overdoing of either positive or negative feedback can also destabilize an organization in ways that can be catastrophic. So,

this approach must be taken with great humility, patience, wisdom, and courage.

Central to successful navigation and influence on complex adaptive systems is a full understanding of how to develop high-performance self-organizing local relationships---also known as high-performance frontline teams. Let's take a moment to explore the current state of understanding of what the most vital context and components are that create the most effective, high-performance teams.

Teams Operating as Complex Adaptive Systems

Many of us have experienced low-performance teams. This tends to bias us against teams. This is the "team" where no one else did anything, and we did 90% of the work, yet others took all the credit. This is the "team" in which a group of people competed with each other to be the leader, and nothing else really got done. This is the team where a dominant character dragged the others on a wild goose chase, only to promote his role in the organization.

Let's face it, most teams are not very effective and don't perform at a high level. Yet, we have all witnessed and cheered on many great high-performance teams---that rag-tag group of middle-talent USA hockey players who slayed the mighty Russian team in 1980, the dynasty 49er football team in the 1990's, the 2013 New Zealand Rugby team, the Chicago Bulls in the 90's, etc.

The Magical Ingredient

These teams inspire and excite us with their amazing abilities. Yes, they include lots of talent, yet there is something else magical about these teams. They flow and work together, like a flock of birds, dazzling with their fluid dance of victory, often against the

odds and against many seemingly insurmountable obstacles. That magic is the secret sauce of teams.

The excess energy and effort that comes when simple, self-organizing local relationships are well guided by coaches, experience, and strong relationships within the team. Team-based peak experiences, though rare, manifest experiences that members of exceptional teams will relish for the rest of their lives and the rest of us yearn for in our workplace and homes.

Google undertook one of the largest and most comprehensive explorations of what makes for the highest-performing teams. (Vakil, 2012) While most of us would guess "the team with the most talented members (agents)" or "the teams in the most powerful place with the most powerful people on it," Google's Aristotle Project revealed far more impactful influences on team performance. Here is their top 5, with the first being by far the most influential:

#1. Psychological Safety

#2. Dependability

#3. Structure and Clarity

#4. Meaning

#5. Impact

What does it mean that psychological safety is most important? What role does psychological safety play in the successful leadership of a complex adaptive system?

Psychological Safety

Thoughtfully described by Amy Edmonson (2018), psychological safety indicates that all members of a team feel safe with each other. And their leaders feel free to express themselves fully and honestly without risk of embarrassment, punishment, ridicule, or reprimand. Errors surface because it is safe to surface them. Opportunities are evaluated because the actual situation is fully

understood. All members of the team are actively engaged in solving the challenges they discover together.

Psychological safety is related to trust—yet differs in important ways. Trust is often what we experience in relationships with other people. We might find a team member offering the following rather insightful and candid comment:

> I trust Jimmy because he makes me feel safe and speaks honestly and reliably with me. My own psychological safety, however, is an internally available state that requires all my local relationships to be safe from my perspective.

This team member might trust three people on their team fully and not trust one. As a result, the team is not safe for this member. We know from many studies of successful group dynamics that teams are only as safe as the level of safety experienced by the most fearful member of the team.

Psychological safety is a higher threshold that takes more time and effort to achieve because all of us have different thermostats (and thresholds) of safety, based on our own life experiences. Jeremy Fish offers the following example:

> If I experienced a deeply traumatic event with someone from a particular ethnic, gender, or religious background, that may make me feel unsafe with anyone from that particular background---unless and until I make myself vulnerable and am self-aware enough to realize I am stereotyping to protect myself in a dysfunctional way. I must open up and make myself vulnerable, which means others on my team must do the same. Vulnerability-based trust (Lencioni, 2005), then, is essential to achieving full team psychological safety—starting with the leader(s) who must be willing to be vulnerable to help the team achieve full psychological safety.

This can be a very tall order for leaders who have relied on being resilient overachievers who appear invulnerable in their pursuit of promotions and higher levels of leadership in healthcare or any other environment. Leadership focus on cultivating team-safety, then, far outweighs command-and-control mechanisms when engaging with complex adaptive systems. Without psychological safety, it's unlikely the other 4 key characteristics of high-performance teams identified in the Aristotle Project can be manifested.

It would appear, then, that simple, self-organized local relationships must be awash in a sea of psychological safety to begin to produce more adaptive emergent influence on complex adaptive behaviors to improve overall performance. Vertically integrated, hierarchical industries such as healthcare often struggle to increase psychological safety as titles, positions, and professional silos often reduce safety in ways that can resist the introduction of team-safety as a new system cultural priority. It is no surprise, then, that many healthcare organizations have turned to executive and team coaching to begin to shift the culture in the direction of team-based performance over individual performance goals, metrics, and outcomes.

Complexity of Health Care Systems: An Initial Analysis

Keeping these comments in mind – with their saturation in hope and delight—we can turn in a preliminary manner to the pressing matter regarding how Miller and Page's insights relate to our understanding of and attempt to reform and improve the contemporary health care system.

Mind of Their Own

First, the leaders of mid-21st Health Care Systems need to recognize that they are dealing with complex adaptive systems. These systems tend to have "a mind of their own." They are self-

correcting and self-organizing. Furthermore, they tend to be strongly influenced by initial conditions (the moment when parts of the system first came together), as well as emerging decision horizons.

As Miller and Page (2007) observe, profound and rapid disruptive and unexpected change can occur in an adaptive system if a powerful organizing factor suddenly enters the system's "playing field." Earthquakes take place as the system adjusts to the intrusive event or force and as it pulls for greater attention (acting as a "strange attractor"). In contemporary health care systems, this earthquake has been centered on COVID-19-responsive measures and models.

As already noted, the world of health care is filled with complex, multi-tiered problems and dilemmas that do not yield to simple solutions (as is the case with health care puzzles). Not only are problems and dilemmas quite complex, these challenging issues also require multi-disciplinary perspectives. They often incorporate financial and interpersonal matters as well as matters related to medicine and the specific care of patients.

In the case of dilemmas, there is also the challenge of discovering that several viable solutions exist regarding the issue(s) being addressed. Competing priorities and differing perspectives and practices compete for our attention. They often are distilled into a set of two competing priorities. We swing back and forth in considering the benefits and drawbacks concerning the perspectives and practices to be found in each polarity. We suggest that the world of polarities often accompanies the complex adaptive system in which we are operating as leaders and operatives in contemporary health care.

Multiple Competing Interests

Given the elusive nature of complex adaptive systems and the problems, dilemmas and polarities accompanying these systems, it is readily apparent that the study of and understanding of

complex systems is critical. As Miller and Page (2007, p. 7) conclude:

> The science of complex systems and its ability to explore the interest in between is especially relevant for some of the most pressing issues of our modern world. Many of the opportunities and challenges before us- globalization, sustainability, combating terrorism, preventing epidemics, and so on-are complex. Each of these domains consists of a set of diverse actors who dynamically interact with one another awash in a sea of feedbacks.

Miller and Page (2007, p. 7) arrive at this conclusion by identifying a set of "interests" that intersect in the study of complex systems. They seem to be hovering on the edge of acknowledging the presence of multi-tier dilemmas (and even distilled polarities) in many, if not all, complex systems. While they are relating these interests specifically to the computer-based modeling of complex systems, their list seems to be directly relevant to any engagement in the study of these systems:

> It is the interest in between various fields, like biology and economics and physics and computer science. Problems like organization, adaptation, and robustness transcend all of these fields. For example, issues of organization arise when biologists think about how cells form, economists study the origins of firms, physicists look at how atoms align, and computer scientists form networks of machines.
>
> It is the interest in between the usual extremes we use in modeling. We want to study models with a few agents, rather than those with only one or two or infinitely many. We want to understand agents that are neither extremely brilliant nor extremely stupid, but rather live somewhere in the middle.

It is the interest in between stasis and utter chaos. The world tends not to be completely frozen or random, but rather it exists in between these. two states. We want to know when and why productive systems emerge and how they can persist.

It is the interest in between control and anarchy. We find robust patterns of organization and act1v1ty m systems that have no central control or authority. We have corporations---or, for that matter, human bodies and beehives-that maintain a recognizable form and activity over long periods of time, even though their constituent parts exist on time scales that are orders of magnitude less long lived.

It is the interest in between the continuous and the discrete. The behavior of systems as we transition between the continuous and discrete is often surprising. Many systems do not smoothly move between these two realms, but instead exhibit quite different patterns of behavior, even though from the outside they seem so "close." ·

It is the interest in between the usual details of the world. We need to find those features of the world where the details do not matter, where large equivalence classes of structure, action, and so on lead to a deep sameness of being.

We offer this list because we believe that each of these "interests" is directly related to addressing the mid-21st Century challenges of health care. These interests represent some of the dilemmas (and polarities) that exist in the world of contemporary health care. This list of competing interests might easily be posted on the agenda of a select committee seeking to find ways in which best to address these challenges. The list itself can be approached as a series of polarities that are best confronted through the use of

polarity management tools such as those offered by Barry Johnson (1996) and described later in this book.

Conclusions

We conclude with a historical (and hopeful) comment about complex adaptive systems that Miller and Page (2007, pg. 3) offer early in their book:

> Adaptive social systems are composed of interacting, thoughtful (but perhaps not brilliant) agents. It would be difficult to date the exact moment that such systems first arose on our planet—perhaps it was when early single-celled organisms began to compete with one another for resources or, more likely, much earlier when chemical interactions in the primordial soup began to self-replicate.
>
> Once these adaptive social systems emerged, the planet underwent a dramatic change where, as Charles Darwin noted, "from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved." Indeed, we find ourselves at the beginning of a new millennium being not only continually surprised, delighted, and confounded by the unfolding of social systems with which we are well acquainted, but also in the enviable position of creating and crafting novel adaptive social systems such as those arising in computer networks.

We have adopted a Salus perspective, in walking you, the reader, through several of the vital components and behaviors of Complex Adaptive Systems, highlighting the very adaptive nature of flocks to utilize proximal feedback to rapidly adapt to external threats within the flock. We have provided a series of games and activities that represent the four states of organizations, with a reflection on how simple organizational processes and states may be automated via computers and AI,

and how complicated and complex states and processes will likely remain the primary domain of humans, perhaps with AI-assistance.

We have made the case that having the right mindset to recognize when an organization is itself a complex adaptive system. Addressing highly complex challenges can provide healthcare leaders with a variety of ways to ensure successful adaptation. Self-organizing teams can be created, with their members embracing processes of robust feedback and promoting psychological safety. As members of a safe and reflective team, members can probe the system, watching for and enabling adaptive emergent behaviors.

Members of successful teams are monitoring maladaptive or potentially destructive emergence, while asserting constraints to limit negative impact on the organization. They are aware, at some level, of what chaos and complexity researchers have labeled "strange attractors." These are often elusive, but always powerful, processes and behaviors that pull systems in specific directions.

These "attractors" might be something as simple and distracting as an ongoing interpersonal conflict in an organization, or as complex and constructive as the ongoing support for the personal and collective achievement of all members of the organization (the "team spirit" to be found in successful sports teams). Under the best conditions, when safety prevails, a strange attractor can draw an organization toward a new desirable state (Gilstrap 2005).

We wish Dorothy Wellington success in operating her clinic and hope the "strange attractors" that operate in her own clinic are drawn to and help to cultivate a spirit of Salus.

In Chapter Eleven, we continue to explore the nature of and benefits to be derived from complex adaptive systems. We offer some additional insights regarding the dynamics of complex

adaptive systems while probing more deeply into the implications of these insights regarding the operations and leadership of contemporary health care systems.

Chapter Ten

Salus Perspectives, Policies and Practices

It seems that many leaders convert complex dilemmas into simple puzzles. When they do so, they find that no matter how they solve the puzzle, a new puzzle pops up and undermines their progress.

A complex adaptive system (at least as found in a social setting) is composed of numerous elements that are tightly interwoven. They are interdependent and operate in close proximity to one another. Each part looks to the one next to it for direction, thus eliminating the need for traditionally valued hierarchical control.

A system with only positive feedback relationships between its agents will soon explode from the exponential growth and pace of action within the system, or this system will collapse as all of its resources are exhausted as a result of its unbridled growth. Some negative feedback is needed to apply breaks and corrections. Conversely, a system with only negative feedback relationships will die quickly. It is smothered in negativity and a lack of sustained energy. Some positive feedback relationships are needed in order to provide both direction and energy. It usually takes only a bit of negative feedback to keep a system operating in a reasonable, sustainable manner.

Delays in a system account for more of its unique features than either the size or type (positive or negative) of feedback operating in this system. There are systems in which delays are very short. The feedback is proximal (neighborly) with agents working closely together. Elements of the system are tightly coupled. Each element reacts immediately to the actions taken by a neighboring

element. They can be quite agile in their response to outside challenges—but can also be quite jumpy ("trigger-happy"). Other systems can operate with major delays in the flow of information and either positive or negative feedback. The agents operating in these systems are loosely coupled. The feedback is distal (foreign). This system runs the risk of responding too late, with too little effort, and in the wrong direction to an impending challenge.

As we move from complicated to complexity, we shift from a highly static, stable, and predictable environment or context into a complex one. This environment is filled with dynamically interdependent movements of multiple agents across an often-fluid environment. Feedback is not only delayed (distal); it is often confusing or even contradictory. Interactions become more loosely coupled.

As certainty wanes in a system, as feedback becomes more distant (in time and space) and agreement becomes more challenging, we move into the zone of the complicated, -requiring the more tightly coupled and serial decisions and actions of that zone. Once uncertainty is dominant, feedback is distant and often contradictory. Disagreement is more likely than agreement. We find ourselves in the zone of complexity.

Physicians are inundated with efforts to give them negative feedback about "unnecessary care, labs, images, hospitalizations, procedures, medications, etc." in the form of what are called "prior authorizations."

Psychological safety indicates that all members of a team feel safe with each other. Their leaders can express themselves fully and honestly without risk of embarrassment, punishment, ridicule, or reprimand. Errors surface because it is safe to surface them. Opportunities are evaluated because the actual situation is fully understood. All members of the team are actively engaged in solving the challenges they discover together.

Simple, self-organized local relationships must be awash in a sea of psychological safety to begin to produce more adaptive emergent influence on complex adaptive behaviors to improve overall performance. Vertically integrated, hierarchical industries such as healthcare often struggle to increase psychological safety as titles, positions, and professional silos often reduce safety in ways that can resist the introduction of team-safety as a new system cultural priority.

A correct mindset is needed to recognize when an organization is itself a complex adaptive system. With this awareness, leaders of a healthcare system can more successfully address highly complex challenges. An appreciation of complex adaptive systems can open the door for consideration of new perspectives, policies, and practices for healthcare leaders. These Salus P3 engagements can assure the successful creation of self-organizing teams that engender robust feedback and promote psychological safety. Under these conditions, team members can probe the system, watching for and enabling adaptive emergent behaviors. They can monitor maladaptive or potentially destructive emergence, while asserting constraints to limit negative impact on the organization. Constructive "strange attracting" processes and behaviors can be identified or created that draw an organization toward a new desirable state.

Chapter Eleven

Delivering Health Care in Complex Adaptive Systems II: Portraying and Tracing Implications of Working in a Dynamic System

Dr. Dorothy Wellington

I talked with my family and friends and decided it was time for a change. Thankfully, my husband had a well-paying job in finance, so we were not dependent on my income, because what I wanted to do was going to be very risky. I wanted to completely change how I cared for people – by adding other vital professionals into the relationship in a small, team-based clinic that provided full-spectrum care in a one-stop-shop model. No matter what my patients showed up with, we would strive to provide the care they needed. The billing of insurance has become way too cumbersome and the reimbursements just kept dropping. Instead, we would directly bill the patients, a thing called "Direct Primary Care." We'd have a monthly premium at a sliding scale. That way, we'd have a predictable income, so I could hire staff.

I decided for the first year that I would not make any income myself and use all the revenues to hire staff, buy equipment, establish a more intuitive, user-friendly electronic record, and provide great care to a smaller number of patients. We decided 500 patients were enough, if we charged them $200 a month.

That would come out to about $1.2M a year, minus lease for the office about $1M. That would be enough to hire a psychologist, a social worker, a dietician, a nurse, and a practice manager to help manage office staff and patient communications and follow-up. It would also allow us to purchase some basic testing capabilities, like 0xygen saturation devices, a sonogram machine, and urgent care type office-based testing, like at EKG machine. We also bought a used X-ray machine to allow for basic

fracture care and Chest X-rays to rule out pneumonia and heart failure. Of course, I had to spend my own money first, so I took out a $200,000 loan to buy the equipment, sure I'd pay it back in a year-or-two.

I was very excited when we hit our first 100 patients. They were excited, too, "You're back Dr. Wellington, it's so great to have an hour to talk with you instead of 10 minutes !!" I felt a surge of enthusiasm as I began to dig more deeply into all aspects of health and well-being for my patients. We called our practice the "Family Health and Wellness Practice." I took some online courses to broaden my expertise in Functional Medicine and Lifestyle Medicine. These are two areas I felt would best help me help others.

Within months, I could see and hear the impact of our work. Patients were starting to address long-standing challenges that we had put aside for years, as I didn't have the staff or expertise to help them overcome their barriers to health. We expanded our intake questions to include trauma-related events, depression screening, anxiety screening, environmental exposures, stress-index – together, what we began to learn made up a new term for us…Allostatic Load. This load of toxins and stressors wears down our body until we become ill – sometimes for decades before we are ill. Instead of waiting for illness to manifest, we began to identify major toxic and stress impacts on my patient's health earlier and earlier.

In adopting a Salus perspective, we must gain a greater appreciation for the unique way in which complex adaptive systems operate. We can then turn specifically to the way in which an understanding of these systems might help us address health care issues. In Chapter Ten, we made rather extensive use of metaphors in describing the nature and dynamics of complex systems. This seems appropriate given that these systems can be quite elusive. After all, they are complex! We might best be able to gain some sense of how they operate by examining the way in which they appear in systems that are more concrete (tangible) than those found in social systems.

Keeping this approach to understanding the nature and dynamics of complex systems in mind, we offer three portraits (actually, they are motion pictures) of complex adaptive systems. Our first portrait is based on a mechanistic metaphor involving the rolling of balls across a warped plane. Our second portrait is more fluid in nature. It concerns the transformation of water into both ice and vapor, along with the chaotic ("white water") movement of water down a riverbed. Our third portrait is a bit more conceptual in nature and less graphic—but no less dramatic. It concerns the dramatic transformation that occurs in a system when emergence occurs. The ball is no longer a ball, and the river is no longer a river. A profound change has occurred in this complex, adaptive system.

We begin with the movement of a ball down a plane that is warped—or more down-to-earth, the rolling of a golf ball across the warped plane of a golf course green. We become even more down-to-earth when offering specific examples of the warped plane and related processes that are often found in health care systems. We will be doing the same when offering the other two metaphoric portraits.

Portrait One: Navigating on a Warped Plane

One of the most important and sometimes overlooked concepts to come out of chaos theory and the study of complexity and adaptive systems is the observed tendency of all fluid systems to bifurcate (split into two or more pathways). In essence, when fluid systems begin to break up (as a function of the speed at which the fluid is moving or as a result of the introduction of a foreign, intrusive element) parts of the system tend to move in different directions.

These diverse movements of particles, units or people will, in turn, form two or more coherent subsystems that may later subdivide again. Thus, if we pour a small glass of water on a smooth surface (such as a table or countertop) it will tend not to

flow in one direction or remain together as one coherent mass. Rather, it will soon break into two or more sub-streams that flow in two or more directions across the surface of the table or countertop. This represents an essential feature of all dynamic systems—there is a strong pull toward bifurcation.

In his introduction to a book co-authored by the Nobel-Prize-winning theoretical physicist, Ilya Prigogine (Prigogine and Stengers, 1984, p. x), Alvin Toffler offers the following commentary on bifurcation:

> In Prigoginian terms, all systems contain subsystems, which are continually "fluctuating." At times, a single fluctuation or a combination of them may become so powerful, as a result of positive feedback, that it shatters the preexisting organization. At this revolutionary moment—the authors call it a "singular moment" or a "bifurcation point"—it is inherently impossible to determine in advance which direction change will take: whether the system will disintegrate into "chaos" or leap to a new, more differentiated, higher level of "order" or organization, . . .

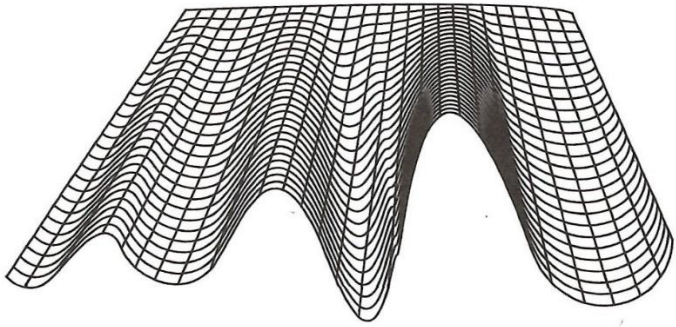
One of the key controversies surrounding this concept has to do with Prigogine's insistence that order and organization can actually arise "spontaneously" out of disorder and chaos through a process of "self-organization."

A Warped Plane

The noted biologist, Conrad Waddington (1997) describes this same tendency toward bifurcation in his model of chreods (see Graph One)—warped planes on which objects move in an unpredictable manner. Waddington uses the metaphor of a ball being placed at the top of a sloping plane (thin sheet of metal or plastic). As we bend and warp the plane, ridges and valleys are formed. When the ball is placed on a tilted plane, the inherent dynamics of the plane become evident. The ball will begin to roll

straight down the plane until it encounters one of the ridges. At this point, a series of oscillations tends to occur. The ball moves back and forth before it eventually begins to roll down one of the valleys and picks up speed again.

Graph One: The Warped Plane



If several balls are rolling down the plane at the same time, this first ridge will become a point of bifurcation for the entire system. Some balls will move in one direction (depending on the pattern of oscillation when encountering the ridge) and roll down one valley, while other balls will move in a different direction, rolling down one or more of the other valleys. A ball may gain enough momentum to roll over the top of one ridge into a second valley. If there is not sufficient momentum, the ball will remain in the current valley.

Thus, a few critical moments in the life of the ball as it rolls down the plane make a major difference in the outcome of the roll. The pattern of oscillation determines which valley is chosen and whether or not the momentum is sufficient for the ball to shift to another valley. There is a cluster of conditions (in the form of

valleys and ridges) that define the specific alternative courses to be taken by the ball.

Order, Chaos, and Oscillation

Waddington's warped plane relates directly to the alternating patterns of chaos and order that many complexity theorists have identified. The tendency toward order is evident in the movement of the ball down a specific valley. Once we know which valley is chosen, we can predict the movement of the ball back and forth down this valley. However, before the ball moves into a specific valley, we can only guess at its ultimate pattern. In essence, balls appear to be probing for order and a specific direction of movement. The balls engage in a process of oscillation that occurs immediately before the balls bifurcate and begin rolling down one of the specific valleys.

Probing is a trial-and-error (seeking oscillating) process in which many different options are examined and even tested. It plays a critical role in any evolutionary process. For instance, natural biological evolution requires the spontaneous fluctuation of species and the subsequent irreversible selection of specific characteristics. Successful adaptation of any type—whether individual or organizational, reactive or creative—must always contain a random component. In essence, an organism that is seeking to adapt to a changing condition or environment begins by trying out a variety of behaviors. It will fluctuate in its behavior and become temporarily unpredictable, as in the case of the ball oscillating back and forth at the top of the warped plane.

Several biologists have recently suggested that oscillation tends to occur in many organisms at a point immediately before they transition from a stable to chaotic state and before their ultimate commitment to a specific, irreversible course of action (a bifurcation). Many of these oscillating behaviors— these trial-and-error (innovative) efforts—are not effective. They do not work. One or two do work, however, leading the organism to

expand its repertoire and shift its regular mode of functioning to accommodate these changes.

The exploratory processes—the endless trial and error of mental progress—can achieve the new state only by embarking upon pathways randomly presented, some of which are selected for the survival of an individual or organization. We may, as a species, be involved right now in this exploratory process. We may be collectively oscillating and considering various options regarding our capacity to live with pandemics, climate crises, and societal violence that will inevitably occur in our increasingly flat and interconnected world (Smick, 2008).

Navigating on a Golf Course

Our ruminations up to this point have all been quite abstract, for we rarely roll balls down a warped plane. Let us take our illustration to a location with which many of us are familiar. This is a golf course—and more particularly a green on the golf course where we are trying to putt our golf ball. Imagine that we are a player trying to get the ball in the hole. The hole is an attractor. But it will only work as such if the ball gets close enough to the rim. Before we get there, we have to negotiate the surface between ourselves, as the player, and the hole. The putting surface has many other local attractors and barriers (little holes, ridges, etc.).

This analogy to putting may be a good one for us. Except in real life, there are multiple putters all putting at the same time, often in random ways. So, our golf balls are also banging into each other and ricocheting in the wrong direction, falling into the wrong attractor...or a different one than we intended. A self-organizing team will produce patterns. and disciplined, feedback-full putting....like a dance of balls across the green. The balls will glance off each other, with dynamic ricochets dazzling the observer. All of the balls fall into their intended cup at the same time or in series, which creates a danceable rhythm.

What a dream! We wake up and realize that this level of careful choreography is not easy. Complexity is indeed hard. However, safe and creative teams can increase the chances that successful choreography takes place on the putting green where our healthcare organization is operating. Team-based planning and coordinated initiatives provide a way to develop meaningful patterns of action in otherwise random, chaotic systems. Perhaps teams themselves are great attractors.

Frozen Middle Management and the Restricted Plane

When we find ourselves in a management role, we are often doing our best to develop our environment around efficiency. We are making sure the trains arrive on time, rather than exploring where the trains might be going in the future. We leave these more "distal" matters (distant time and space) to the strategists and leaders of our organization. As middle management, our job is more "proximal" (short distance and short time span). We often focus on limiting unnecessary variability and narrowing the pathways of travel in order to reduce inefficiencies and make the most of the resources we have. Our managerial emphasis on the reduction of unnecessary variability can lead us to forge strong barriers and obstacles to working outside of a pre-determined pathway.

In healthcare, managers use many tools such as Clinical Pathways or Evidence-based Guidelines, Protocols, Checklists, and Procedures. When pushed to the extreme, healthcare managers build up barriers to the point where there is only a single pathway down the warped plane of healthcare service delivery. Over time, these can develop into full-blown silos, with hard boundaries and barriers. Specialized language and abbreviations disrupt, delay, and distort communication; separate databases prevent coordination and increase inefficient duplication of efforts. All of these isolating factors drive up healthcare costs for everyone.

This recurrent dynamic of isolation in many healthcare organizations, which tends to emerge when we are traveling on Waddington's Warped Plane, is to be found operating at many levels in contemporary American healthcare systems. There are many warped planes and many pathways down these planes. We see this operating, for instance, in the provocative concept of "Frozen Middle Management" offered by our colleague, Peter Sterling (Sterling, 2020). Middle management wants everything to be predictable and controlled (that is the fundamental nature of being in a frozen state).

On Waddington's plane, this would mean that the walls on one of the pathways down the plane would be enlarged and strengthened (becoming like "silos"), so that the ball (operations of the organization within a specific division) would be able to travel down only this one pathway. There is no deviation—no moving to another pathway.

This reminds us of the children's toy, where balls are rolling down one pathway – from the top of a short tower to its base.

For at least a short period of time, the child delights in seeing the ball roll from top to bottom – much like a frozen middle management team takes temporary delight in seeing (and

measuring) the success of a project that has been tightly controlled and is completely predictable (and measurable). However, the child soon grows bored and looks for some other novelty. Similarly, the frozen middle management team soon finds that the predictably successful projects are no longer motivating.

Professionals who are constrained by the frozen, hard-boundary pathway will first refuse to use it. Or they will point out that the balls fall out into chaos if tilted this way or that. Rigid pathways in healthcare inevitably confront unique patient situations that can't fit into any pre-ordained or pre-structured pathway.

The uniqueness of human conditions and the complexity of challenges make such rigid, siloed pathways even riskier. For example, an Obstetrician, Midwife, or Family Physician is unable to override a Labor and Delivery Protocol that requires them to perform a risky C-section. An alternative path that the physician or midwife might choose under this unusual situation would likely result in a healthy baby via a vaginal delivery. In seeking cohesion and predictability, over-constrained clinical pathways can become risky and even dangerous.

The management team is "frozen." It becomes risk-averse—yet doesn't want to take a chance. It would be a "disaster" if the ball were to flip out of the desired pathway. There are no plans for this to occur. This would be an "unimaginable" condition—what Nassim Taleb calls a "black swan" (Taleb, 2010). If the ball were to flip out of the child's toy, then the child is likely to cry and even have a tantrum. And the ball could end up almost anywhere (bouncing on the table and then on the floor, only to end up under a piece of furniture).

If the only option is a disaster and the potential of outright chaos (the ball bounces all over the place), then it can be fully appreciated that the management team is frozen in fear of taking a risk. In essence, these overly rigid clinical pathways try to replace the Chef with the Recipe. And most of us realize a Chef

can make a masterpiece meal without a Recipe, and a novice can make a disaster even while following a recipe religiously. Humans are not ingredients. They are far more complex and dynamic. Clinicians must have softer boundaries with flexibility to customize to each unique patient.

Then there is the matter of motivation and boredom. How do you make the rolling of the ball down a single pathway somehow interesting? We can try making the pathway more complex and filled with many side effects, as is the case with a famous kinetic art sculpture located at the Logan Airport in Boston, Massachusetts.

Called the "Goldberg Variation," this sculpture sends a set of balls down a metal pathway one at a time. While traveling along this one, well-protected pathway, the ball hits a set of gongs and bells, drops off a short cliff to the next edition of the pathway, and swirls around quite a bit on its journey to the bottom of the sculpture – only to be lifted again by a small elevator to the top of the sculpture. The process is repeated.

It is a wonderful sculpture to witness--with many balls moving at the same time and many bells and gongs sounding at the same time. Yet even this compelling experience draws us in for only a short period of time. We must catch our flight to Chicago or pick up family members who have just arrived from San Francisco. Short-term novelty can hold our attention for only a short period of time, especially if this novelty

is actually carefully controlled and predictable. It is only novel for a brief period of time—and then it is "the same old thing again."

What does all of this mean with reference to the functioning of frozen middle managers and middle management teams? First, it means that not much learning is taking place. There is what Argyris and Schön (Argyris Schön, 1974; Argyris, 2001) (2000) call first-order learning. This elementary form of learning occurs when managers are first embarking on the journey down a predictable and restricted pathway. Inserting a fixed, first-order silo into healthcare results in a lowering of any higher-order learning and thinking--what Argyris and Schön call second-order learning and what Daniel Kahneman (2011) identifies as "slow thinking.

Unfortunately, second-order learning and related second-order slow thinking are required when making dynamic adaptations to unique challenges and events. Rather than lifting up excellence of service on behalf of meeting an exceptional healthcare challenge, first-order learning and habitual fast thinking can bring down the value of the most skilled professionals when they are providing care under exceptional circumstances.

It is another matter when the provider of health care services faces the routine. That is, when the balls are rolling down the restricted pathway. Once the managers have "learned the ropes" regarding this one project and one pathway, there is no need to learn anything more. Second-order learning is only needed when the ball (project) can move over a ridge (leaping out of an organizational silo) and venture into a new valley and learn how to navigate a new pathway.

There is a side benefit: with this new challenge and new learning comes another level of learning. The unfrozen middle managers learn something about how to learn! Second-order learning is fully present. Rather than over-compensating for professional care variability with rigid, artificial siloed pathways, middle

managers can carefully seek a full understanding of the complex, dynamic system in which they are operating. They can learn to coach and guide clinicians in seeking to limit unnecessary variability. As slow, analytic thinkers, these managers can ensure that the clinician's autonomy is protected while collaborating with clinicians in arriving at thoughtful judgements. These managers are required to navigate a warped plane of care adaptively and effectively.

Difficult Choices and Unique Challenges

It is time to bring back Dorothy Wellington and her clinic. It would be tempting for her to pretend that a warped plane of care, with many ridges and valleys of decision-making, is only a single pathway. No difficult decisions have to be made. Artificial clarity and simplicity are created. Unfortunately, when confronted with unique challenges and patients, one will often find that this clarity and simplicity collapse. The system suddenly falls into a chaotic state. Dorothy must once again take note of this potential. Removing choice and oscillation between valleys may seem like a clever way to reduce unnecessary noise and variability. However, it reduces the ability of qualified experts to influence decisions and help navigate the oscillations between various pathways and valleys of care.

This expertise—and the processes of slow thinking—are required, in particular by Dorothy, at a bifurcating moment when there is the option of entering a new valley. There often is indecision regarding movement into the new valley. Leaders like Dorothy Wellington have to make a difficult choice--unless they are automatically shoved into the new valley as a result of momentum. Leaders will often "dither" between two options: the old valley and the new valley.

Polarities are formed, which provide unique challenges for those who are making decisions (Johnson, 1996). Each option is absolutely compelling—and absolutely unacceptable. This

dynamic and the indecision of dithering is represented in the ancient fable of the donkey standing between two haystacks. The donkey moves toward one haystack and realizes that he is moving away from the other haystack. He then moves toward the second haystack and realizes that he is moving away from the first haystack. With its thoughts and feelings swinging back and forth, the donkey eventually starves to death, having feasted on hay in neither stack.

When faced with the bifurcating prospect of entering a new valley, leaders like Dorothy Wellington swing back and forth inside their own individual psyche as well as in their collective/societal arena. This dithering can be very damaging both physically and psychologically if sustained for an extended period of time. There is action, but it is ineffective and ultimately powerless action.

This scurrying back and forth is much like what occurs among small marsupials on the African savannah when they are faced with making a choice about escaping a threatening entity, such as a lion. Unfortunately, this scurrying behavior can gain the attention of the lion. The marsupial can easily be devoured. As human beings, we are similarly vulnerable when we are engaged in this kind of mindless, fast-thinking action. Scurrying back and forth is oscillation. Permanent oscillation can become a freeze-like state.

More generally, we can define this condition of oscillation as a matter of finding two or more options to be viable. We can run from the lion, freeze in place, or even whack the lion with a stick or the spear we are carrying. What do we do? The noted philosopher, Richard Rorty (1989), observes that a very painful condition that he called Irony is prevalent when we must simultaneously address two or more contradictory options. We can fight, flee, or freeze when confronted with a real or imagined lion. And we can choose between two stacks of hay (alternative opportunities for achievement).

If we choose to swing back and forth, we create a state of what Ralph Stacey (1996) identifies as Anarchy (see Chapter Ten). Instead, we can remain in thoughtful consideration of each option before moving to the second option. Dorothy should take note of this option. While this requires that we acknowledge (and even help to create and sustain) a state of complexity, there is also the possibility that we will make an appropriate choice. At some point, we do decide to enter the new valley or find a way to remain in (and improve functioning in) the old valley.

Multiple challenges face us when we have made this decision. Middle management needs to rely on expertise from diverse sources when it is moving into a new valley. The same old "experts" probably don't know everything anymore., The way in which we acquire knowledge and test out the validity of this knowledge is itself contained in the pathway down which we are now traveling--to modify Einstein's dictum a bit.

Second-order learning is required when we enter a new valley and find out how to travel down a viable pathway in this valley. There are often new rules to follow in determining what knowledge and perspectives are of greatest importance in this valley. Finances, for instance, might suddenly become of primary concern. We also face new challenges that require slow, deliberate thinking. We might not be aware of all the assumptions that underlie the financial analysis that we are now required to complete. Greater awareness of (and even testing of) these assumptions will be critical.

There is an additional challenge: how does a leader such as Dorothy Wellington test out the validity of the new knowledge being offered, and the assumptions being made? Which spreadsheet do we trust? What accounting procedure do we adopt? New experts are often of greatest value. It is a matter of diversity—as Scott Page (2011) has shown us.

The quality of problem-solving and decision-making, as well as the creativity that attends these critical thinking processes, will significantly improve with the invitation of new members, new perspectives, and more diverse representation of the middle management team. It seems that something "new" tends to unfreeze people and teams (Lewin, 1947).

For leaders such as Dorothy to gain more skill working with even a static, warped plane of care, we must gain more comfort and patience with variability and the ambiguity and discomfort of the oscillations that precede decisions regarding which valley of care to enter. Patience with oscillation, ambiguity, and uncertainty is required, especially in a highly innovative setting that we find in Dorothy's clinic. We tend to train leaders in healthcare and elsewhere to limit and reduce each of these challenging conditions wherever they see them in the name of efficiency. Dorothy needs to be exposed to a different viewpoint, based on Salus-P3.

Efficacy rather than efficiency must begin to emerge as a higher priority for healthcare leaders. A quest for efficiency without regard for efficacy will reduce the energy in the system and eventually freeze the domain. As happens in nature, when a person or system begins to freeze, it can paradoxically feel warm and comfortable just before death. We must learn ways to help "thaw out" our leaders (and middle managers). We might assist them in acquiring new skills as coaches and guides to work and manage across the many oscillations, ambiguities, and uncertainties found on the warped plane of healthcare.

Portrait Two: Navigating in a Turbulent System

As we delve into the dynamics of complex adaptive systems, we might wish to switch from the mechanical metaphors of a ball rolling in the valley or a ball being struck on a green to

representations of actual complex systems that are operating in nature.

Shifting from a static, multi-ridge-and-valley warped plan towards a dynamic, ever-changing, turbulent living system further points to the need for dynamic, collaborative leadership and safe teams. We find flowing and tumbling rivers the ideal metaphor for the Fluid state of organizations—when we have thawed all the frozen areas of the organization and decisions begin to flow like water across the system of care.

Three States of Nature

Stuart Kaufmann (1998), a noted observer of complex systems, offers an obvious but important distinction. There are three quite different states in which complex systems operate. There is the fluid state of water, the frozen state of ice, and the unbounded state of gas (steam/vapor). Ice represents a complex system that is static and heavily structured. It contains many agents, but they remain inactive and isolated from one another.

The gaseous state represents a complex, chaotic system, without any boundaries or structure. There are many active agents, but they fail to interact or influence one another invariably. The fluid state of water represents a complex system that contains both order (structure) and disorder (randomness). Causality begins to fall away as the interplay of multiple agents (water molecules in the case of rivers) begins to create conditions of chaos. When working in this system, we frequently receive feedback regarding collisions that are repeatedly occurring. The system is shifting from ordered laminar flow into turbulent flow.

In the frozen state, there is no feedback flowing between agents operating in the system, whereas in a gaseous state, there is feedback flowing out of each agent, but this feedback is "ignored" by all of the other agents. It is only in the fluid state that we find feedback flowing and being received by other agents.

It is only the fluid system that has the capacity to be adaptive, especially if there is a blend of proximal and distal feedback. In the case of a turbulent river, the distal feedback might be information regarding the release of water from an upstream dam or weather reports regarding a rainstorm occurring several miles above our current location on the river.

Proximal feedback would focus on the immediate volume of water flowing past us at our current location or the presence of logs floating down the river that disrupts the flow pattern. With the availability of both distal and proximal information, we can plan for the present (tactical) and near future (strategic). The interplay between distal and proximal feedback is engaged when we consider the impact of increased water volume on the level of river turbulence--or the (dramatic) potential of trees being uprooted or stuck logs dislodging as a result of an upstream storm.

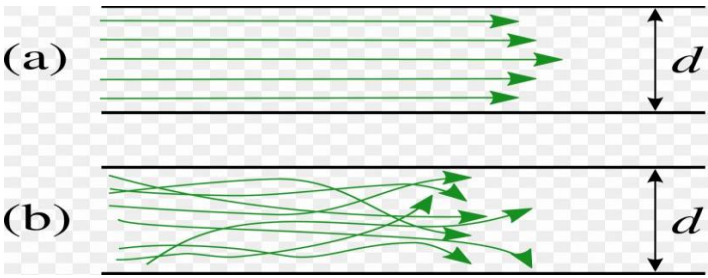
Each of the three systems is operating in our contemporary health care systems. Both proximal and distal information is required to plan for and navigate the turbulence and "storms" which health care leaders face. These leaders and these systems align directly with a distinction we have featured. This important distinction has been drawn by Snowden (2023) between clear, complicated, chaotic, and complex systems (as we noted in Chapter Ten).

The clear system is found in frozen states, with the complex system being manifest in fluid states and the chaotic system in gaseous states. As we proposed, there is a sustained preference among human beings for systems that are clear (or at least complicated). However, we often live and work in environments that are complex or even chaotic, especially in the realm of contemporary health care. Given the presence of these challenging environments, it is worth learning more about each in our role as leaders of healthcare organizations.

The First State: Water

Complex adaptive systems operating in a fluid state are often turbulent, especially when it is water rushing across a rugged surface. Actually, the surface doesn't even have to be particularly rugged. Any body of water will move into a chaotic state of turbulence if it is moving fast and being pushed even faster. Most particles operating in a fluid state will tend to form layers (called laminar flow) (State A in Graph Two). These layers can flow smoothly with very little interaction; however, they tend to interact and create turbulence when moving rapidly (State B in Graph Two).

Graph Two: Laminar (A) and Turbulent (B) Flow



Another analogy for decision-making within a complex adaptive/ dynamic system is surfing....in which the waves are moving, as dynamic attractors, and the surfer is the interested agent, making decisions on when to engage with the wave, how much force to enter the wave, when to stand, and how to move.....with the outcome a joyful ride to the shore. A team of surfers would be several surfers engaging the same wave in an orchestrated fashion. Leadership is like surfing chaos—it involves directional, rapid decision-making with limited information. Leadership involves future-leaning and future-learning vision. Leaders need to "see the waves coming").

As Ralph Stacey (1996) has noted, a system moves from complicated to complex when feedback is distal (distant) ("the

wave is forming") and assessment in more complicated ("will this really form into a rideable wave"). In tracing out the implications of what Stacey has proposed, we suggest that decisions in healthcare systems tend to move from those that are proximal and made in an Emergency Ward ("clear") to those that are distal and made about the assignment of patients to long-term care facilities ("complex").

Frozen System	Clear	Dominated by Causality and Order
Fluid System	Complex	Dominated by Feedback and Emergence
Gaseous System	Chaotic	Dominated by Initial States and Randomness

A noted Buddhist sage, Pema Chodron, teaches that learning to rise off the ground and move with the waves decreases getting knocked over by them--letting go can be safer than "standing firm" when it comes to waves. Buddhists also talk about universal conditions, making use of the metaphor of waves. A single human life is like one of the bubbles on top of the wave. We are bubbles on the wave (individual, temporary life) and we are water (universal, connected life), which we also find helpful. We spend a great bit of our life trying to become the most amazing bubble ever---while missing the deeper connected life of just being water.

Patterns can emerge through distal feedback into waves within the water—most notably with large bodies of water in which the forces of wind, storms, the moon, earthquakes and gravity can suddenly and forcefully create tidal waves that break through previous boundaries such as the shore. These fluid dynamic systems wreak havoc in chaotic fashion through towns, villages, and cities. As climate change produces higher and higher sea levels, such events appear destined to increase, making the concept of a floating city quite relevant.

This concept is something like the Buddhist notion of floating with rather than being rolled and crashed by waves. Floating cities might withstand rising seas in decades to come. This is much like our collective, second order learning and collaborative slow thinking about the mistaken building of rigid bridges. These "frozen" constructions tended to achieve harmonic resonance during windstorms and collapsed. "Fluid" buildings withstand earthquakes when allowed to roll with the earthen waves. Flexibility, not rigidity, is the order of the day when it comes to "wavey" states, especially those demonstrating turbulence.

Kayaking in a Turbulent Adaptive System: turbulence is not so clear when focusing on the earthly landscape, except where earthquakes are concerned. We do find clear and tangible evidence of turbulence in the air--and especially in aquatic environments. For example, one of us [Jeremy Fish] went kayaking recently with a dear friend on the Carquinez Straits delta near Benicia in Northern California. They do this every few weeks, yet it is never the same delta. As Heraclitus teaches us

> *No [one] ever steps in the same river twice, for [they] are not the same [person] and the river is not the same river.----Heraclitus ~ 500BC*

Jeremy offers the following narrative regarding a perilous trip one day, kayaking on the Carquinez Straits:

We have to time our trips to the tides & weather. Otherwise, we have to cross 200 meters of mud to get to the water. We do our best to launch and return on the back of a high tide. So, we often set out about 3 hours after low tide. On this particular day, there was no wind, and we hadn't travelled up-the-delta for several sessions, so we decided together to go up-the-delta. We had assessed the static, warped plane of the delta. We combined that with our preferences and interests (our oscillations between pathways).

We decided to pursue the valley-path toward the Benicia Bridge. Initial conditions all pointed to a calm and joyful trip for us both. Yet, we were not truly entering a static warped plane. Rather, we were engaging with a dynamic combination of rivers, tides, oceans, winds, and a very narrow strait with rigid shores that could change our experience at any moment. We usually like to have an easier time coming back, but the absence of wind and the calmness of water made those "turbulence" factors less powerful at that moment, so up the Delta we went.

Oh, it was JOYOUS, we quickly realized the incoming tide was carrying us rapidly up-the-delta---overcoming the river's force. At one point, we noticed very odd turbulence---we engaged in a proximal assessment and, as a result, laughed and called it Atrial Fibrillation of the water, given its random, irregular pattern. The water tossed and churned in random ways without discernible waves (waves can tip a kayak very suddenly and must be traversed in a very specific way to avoid toppling over).

At that time, there was no real wind, only very choppy water. I made a note to myself. "I think this random turbulence is the equal force of the river meeting with the force of the incoming tide, and I haven't seen that before....wonder which will be stronger on the way back?"

I was recognizing dynamic processes, yet was not moving that uncertainty into any kind of effective distal assessment or prediction about what was happening. We were rapidly heading toward the Bridge, having extended very little effort and enjoying the unique, choppy water and absence of Oil Tankers (which create patterned waves as they pass).

By the time we arrived at the Benicia Bridge, it was very clear that the tide was winning the duel of the water forces. The river was going backwards. As we stopped paddling, we kept moving nearly as quickly under the bridge. Oh oh. Yes, our ah-hah moment had arrived as we faced another decision-point in our travels and began making more meaningful distal assessments. It suddenly dawned on us that heading home would be a very different kind of paddle.

As our distal assessment kicked in, we began to recognize we were going to have a different, tougher time getting back. We hadn't been paying attention to the time during our joyful journey to the bridge, but now we checked the time. It took us 30-40 minutes to travel 6000 meters to reach the bridge, which is well beyond our kayaking abilities for sure. The tide had carried us to the bridge at a speed beyond Olympic kayaking in calm waters. We literally flew on the shoulders of the tide, and now began to hope the tide would join us again on the way back home. In the absence of earlier distal assessments, we found ourselves languishing in wishful distal thinking, one might call it magical thinking.

We began our journey back. As if wanting to add to our mounting dilemmas, the wind picked up quickly and conspired with the Tide to press us back toward the bridge (a bit of magical proximal thinking). Now we faced large white caps that drenched us and water-weighted

our kayaks, nearly tipping us both over several times. Through this conspiracy of tide and wind, the flowing ocean water was overwhelming the river. These conspiring conditions had now created a high-risk situation for two weekend kayakers.

Our joyful flight to the bridge had now become a death-defying race against a wickedly churning, river-like riptide going the opposite direction of home. Our mindset of a joyful paddle through a tranquil lake-like delta had now become a life-endangering battle that would push both of us to the brink of exhaustion and risk our sinking in the chilly waters of the delta. Perhaps we call them deltas as they are so ready to change at the whims of winds and tides.

Any cessation in paddling led to a rapid movement back toward the bridge. My anxiety rose, adrenaline flowed, and my attention focused. I realized I must paddle continuously as strongly as I can to overcome the turbulent tide. The wakes and waves might turn over my kayak if I am at the wrong angle and not moving. Our pleasant kayak was converted to a risky, exhausting test through the conspiracy of tide, wind and river....making our decision to go up-the-Delta 45 minutes earlier look foolhardy at best. Our proximal, frozen state thinking based on the assumption of a static, flat plane had now become the fluid thinking of a dynamic, turbulent delta. A warped plane that was constantly moving. We had failed to do any distal assessment of potentially dangerous conditions.

Water and wind in a tightly bound delta provide a dynamic waterscape that vividly (and dramatically) represents complexity and mystery. How did they miss this coming? Many important questions were never asked. Why weren't there other kayakers out on the water this day? How could such a calm day become so

hazardous in just 45 minutes? Being caught off guard in over-simplified and frozen thinking states can be overwhelming and lead to deeper questioning—stirred by fear and awe at the rapid turn of events. It is easy to scurry back and forth in our fast (desperate) thinking and acting.

Something more powerful than humans is at work. Some of us call her Mother Nature, others God, or gods, yet others Spirit, Gaia, etc. Yet, regardless of beliefs, the rapid shift from apparently simple (frozen) to chaotic (vapor) states creates a profound search for the meaning behind the shift. Second-order learning and slow reasoning were standing at the door, waiting to be invited in.

We return to Jeremy's narrative:

> We joked that Neptune was punishing us for the arrogance to go up-delta. We noticed there were no boats out on the water. We wondered, did other people know better than us that this was not a good day for a gentle kayak? I felt frustrated with the elements as I had to paddle with one arm for nearly 3/4 of the way back as the wind also conspired to turn my kayak away from the shore to which I needed to arrive. I wondered if I fell in, would I have the strength to swim to the shore? I was at that edge between life and death....and that mystery led me to think about God, Neptune and Mother Nature in ways that were not positive.

Perhaps it is our repeated tumbles from frozen simple states into chaotic vaporous states that are a primary source of our beliefs and experiences of the divine, of powers beyond us humans. Do these beliefs, in turn, lead us to second-order learning and slow, thoughtful reasons—or do these beliefs enable us to escape into some state of primitive (habitual fast) thinking? In our frozen state, do we yearn for a simple, boundaried pathway that is created and maintained by some divine being? Do we want our

world to look like the childhood toy that enabled us to roll balls unfailingly from top to bottom?

We have previously distinguished between puzzles that have simple answers and are readily managed, and problems that are multi-dimensional, complex, and not easily understood or managed. While kayaking on the river, Jeremy found that a puzzle (which way to paddle today) became a problem (how far do we go before we turn back, the tide seems strong). We also distinguished between problems (with one goal and one viable solution) and dilemmas (with two or more desirable goals and multiple solutions). Jeremy faced a dilemma: "Do I stay with my friend or paddle my heart out. Can I stop, or will that pull me back to the point where I won't make it back to our destination? I stopped looking for my friend. I risked turning over if I turned my kayak around to look for him".

We also considered the shift from dilemma to mystery. As we have noted, mysteries are those conditions (both positive and negative) that are not in our control. Mysteries ultimately are not comprehensible and are felt deep within our soul. In Jeremy's case, the mystery was stark:

> I wonder not only if my friend is OK but also if I was being unfair to paddle on like this. Has he drowned? Should I just go to the shore, walk to my car and go pick him up? It turned out that my friend had stopped momentarily to take some photos, leaving him a half-mile behind me and out-of-site for the entire trip back. We usually talk during these outings. Mysteries have a way of demanding silence—as does a recognition that distal planning was absent. No challenging questions were asked and slow analytic, pre-departure thinking was subordinated to our fast-thinking delight at the prospects of once again getting on the water for a day of pure delight.

This traumatic, turbulent water experience likely helped to produce some second-order learning for Jeremy and his colleague. It encouraged both of them to do some distal planning in the future.

Turbulent Complexity: In reflecting on the challenging kayaking trip, we see the impacts of the Turbulence and Contradiction aspects of VUCA-Plus and complex systems. The harrowing experience of this trip adds to a level of dynamism that perhaps the ball-in-valley cannot. While, the warped plane helps us gain greater understanding of complex systems, it is insufficient when used to demonstrate the full impact of dynamic, complex systems in human organizations and experiences

In the end, the static, warped plane may reside more in the world of complication than in the world of complexity; however, this plane certainly introduces us to the world of the complex by introducing us to the dynamics of oscillation and emergent pathways. Dorothy may be facing a state of complication, but she certainly is in "for a ride" (as was the case with Jeremy near the Benecia Bridge) when navigating the turbulent conditions of her healthcare clinic.

Jeremy offers a postlude to his story of turbulent kayaking:

> Fortunately, there was no tragic ending. Once we finally made it back to our home shore, we joked, "Can you believe people row around the world? We barely made it in a controlled delta with land on both sides just because of a little wind, tide, and river conspiracy to increase the risk of our little adventure." Thankfully, we were able to adapt our mindset from simple to complex so we could safely make our way home. However, not everyone is able to do that, as we learned when we later read about a tragic event in the newspaper.
>
> A star baseball player in a local high school jumped into a Lake to fetch his drifting raft. On any ordinary day, such

an event would end with this young athlete rescuing his errant raft. He would subsequently enjoy BBQ and float across the lake on a lazy afternoon with friends. However, on this same day, wind conditions were shifting. He eventually drowns while trying to fetch his raft on Lake Berryessa in Napa, California.

This baseball star was an accomplished swimmer. The raft was clearly in sight. He was swimming in a lake that was usually calm. It has clear nearby shores and is not as vast as the ocean. Yet, at that moment, on that day, the wind and the mud and the water overwhelmed the simple, frozen task of swimming out to rescue a raft. Why had the raft drifted out from the safety of the shore? Likely, the wind had blown it there, the same wind that would pull the water away from the shore---thus creating a micro-riptide of its own, catching the athlete by surprise.

Perhaps if he had been able to shift to a complex, fluid thinking state in that moment, he would have chosen to let his raft drift out further. He could have asked for help from someone with a boat that could safely capture it. He might have been able to conserve his energy for a tough swim back to the shore had he recognized the turbulent flow of the lake. Alas, instead, he swam to his death, to be mourned by his community and friends in yet another tragic drowning that takes several people's lives every year. What condition was he not prepared for in that seemingly simple puzzle?

The consequences of our mistaken perceptions can be fatal when we only see a puzzle where Mother Nature creates turbulent problems and ultimately, incomprehensible mysteries. Many options are available when we find ourselves in a Fluid State. Many paths can be taken. We are confused, in a frenzy, undirected. We can illustrate this state by turning to the flocking

of birds--which we have described previously. We noted that birds tend to flock because predators find it hard to focus on any one bird in the flock. The same reason exists for the schooling of fish. Let's take the perspective of a hawk. He is swooping in on the flock of birds. However, there are so many options for a bird to grab that he loses focus and can't home in on any one bird. The hawk swoops through the entire flock and catches none of them. His only hope is that there will be a bird flying independently of the flock on which he, the hawk, can focus.

It is not only birds that flock and fish that swim in schools. The challenges we face as human beings also often come to us as swarming messes. More precisely, challenges that are fluid in nature can often be difficult to address. Like the Hawk, we find it hard to concentrate on watery issues. As we have already noted, laminal dynamics provides clear distinctions and separations between two or more layers of moving fluids. However, as we have also noted, when fluid systems are pushed hard, the layers tend to interact. Turbulence reigns supreme—and we must adapt or fall victim to the swirling confusion. We become Hawks who fail to achieve anything. Or we become the teenager who failed to reach safety in a turbulent lake of California.

The Second State: Ice

We have already identified the way in which this state is manifested in certain mid-management conditions. We described frozen middle management and related it specifically to an unwillingness to reduce boundaries (so that the ball/issue will always be contained and its movement predictable). The frozen state can actually be as damaging as the fluid state—or even more damaging. In a frozen state, we are like marsupials who are trying to avoid the lion by standing absolutely still.

An important difference is to be drawn. The marsupials begin to "shake off" the accumulated adrenaline after several seconds. Human beings remain frozen. They rarely shake anything off

(perhaps going for a run or swimming several laps). This failure to drain off the adrenaline leads to a very destructive state, both physically and psychologically.

It is even more damaging if we are facing the challenge of a Frozen dilemma. We are stuck in "Locked in" polarities with eternal swings back and forth. Are these frozen dilemmas (as "Sacred cows") even (or ever) discussable? The same applies to "third rails" that seem to be societal sacred cows regarding what we are to avoid at all costs. We can't talk about the elephant in the room (usually a vividly imagined lion), thus remaining terrified and frozen, with adrenaline (and other activating hormones) coursing through our veins.

The Third State: Vapor

When water has turned into vapor—a gaseous state—then a system is in complete chaos (with minimal structure, seemingly random behaviors, and absent or indiscernible causality). The elephant is loose and destroying everything. The framework of complexity that has been offered by Snowden (2023) and that we presented in Chapter Ten, includes a dynamic link between Clear and Chaotic states. He describes a short-circuit slide over a cliff of clarity into a sea of chaos. This slide suggests a rapid rise in energy from a frozen to a vaporous state without moving through the fluid or complex state. Such sudden shifts create a level of crisis which can be fatal if not navigated properly—as may have happened with our athlete who drowned in Lake Berryessa.

Snowden advises that a specific action be taken: a sense-respondent mindset is established when confronting a chaotic system. This is a mindset that enables engagement of novel practices. For example, there is no question that COVID-19's influence on healthcare was to push it into the short-circuit toward chaos in a matter of weeks to months. Critical care units were overflowing and chaotic. Dead bodies were collecting in freezer trucks parked outside the Emergency Departments.

There was a major breakdown of civil engagement between patients and those nurses, physicians, and others who provided care in a high-risk environment. Our healthcare systems were plunged into a vast and choppy sea of chaos. Members of the health care systems throughout the world had to survive in their own unstable kayaks. We continue to struggle with a successful emergence from this chaos even years later. Turbulence still swirls around our hospital corridors and physician offices.

There was also the upside of this crisis, related to Snowden's mindset. Novel practices like telehealth emerged and grew exponentially after decades of neglect. However, several disturbing questions remain unanswered. As the virus begins to recede from our daily lives, will the state of absolute chaos win out over the interplay between order and chaos that resides at the heart of complex, adaptive systems?

Were we locked into an oversimplifying, clear mindset of puzzles and problems? Did we find ourselves awash with chaotic and disruptive energy and events that spilled us over into chaos and disorder? Can we regain the health and strength of our healthcare systems by now shifting our mindset away from frozen-thinking and vapor-chaos crisis toward a more effective and sustainable engagement with complexity in healthcare? How many swimmers drown in the sea of Covid while trying to fetch their life raft of liberty from masks and social distancing? How many drown in the sea of loneliness and despair as they become isolated from their life raft of support and social joy?

These are the kind of existential questions that Dorothy Wellington needs to ask of herself and her organization. In choosing to establish an innovative institution in which care is primary, Dorothy is awash with chaotic and disruptive energy; yet this same energy is what drives her passion for innovative practices. It also drives the passion of her staff members as they join Dorothy in navigating the turbulent waters of healthcare innovation. Perhaps, the most important question to ask of

Dorothy at this point concerns the matter of safety and trust. Do members of her team feel safe while navigating the turbulence, and do they trust the competence of their fellow team members?

Portrait Three: Navigating an Emergent System

There are many insights to be gained regarding navigating on warped planes and turbulent seas. However, there are additional insights to be gained from the exploration of what are often called Emergent systems. We propose that a key aspect of complexity is often overlooked. We wish to portray this aspect by turning to the phenomenon of emergence. We believe that one of the greatest shortcomings in healthcare leadership concerns a lack of recognition that you simply have to "start something" and then move on to something else. At some point, there will be a tipping point when nothing remains the same. A revolution takes place. Pieces of hay accumulate, and at some point, we have a haystack.

In recent years, there has been a push for urban renewal that focuses on these small steps that lead to a revolution. Specifically, an urban reformer begins by fixing the broken windows that are found in many "run-down" areas of a city. Then, it is time to move on with more extensive "repair" of the broken social service system as well as broken streets, buildings, and transportation systems. Small, evolutionary steps (repairing broken windows) are engaged. And at some point, everything begins to move and change. Evolution becomes revolution because the system is complex and not just complicated. Not only are windows and streets fixed, but the place gets cleaner, people are kinder to one another, and crime drops off.

Miller and Page (2007, p. 4) put it this way when posing a challenge regarding the relationship between emergence and the creation of a complex adaptive system:

> What it takes to move from an adaptive system to a complex adaptive system is an open question and one that can engender endless debate. At the most basic level, the field of complex systems challenges the notion that by perfectly understanding the behavior of each component part of a system we will then understand the system as a whole. One and one may well make two, but to really understand two we must know both about the nature of "one and the meaning of "and."

Miller and Page are suggesting, in essence, that when two (or more) entities are brought together, they sometimes will surprise us and produce something that could never be anticipated when examining each of these entities separately. The "and" is the key here: somehow the "two" make up more than the two "ones" when viewed separately. The usual example used to illustrate this "emergent" dynamic is the outcome arising from the combination of two parts of hydrogen with one part of oxygen. These two gases surprisingly produce an entirely different and totally unpredictable entity: water. The "and" in this case is this chemical reaction has to do with the heat that accompanies the mixing of these two gases. Nothing happens if there is insufficient heat.

Type One Emergence: The example of emergence we have just offered is what might best be identified as Stochastic Emergence. It is all or nothing. At room temperature, nothing happens with hydrogen and water. Add the right amount of heat, and something radical happens. There is a tipping point that leads to a revolution. We can't anticipate the new entity. We can only adapt and learn from it. Many share the story of the frog dropped in boiling water---either immediately jumping out to live or being boiled alive very suddenly. Adapt or die might be the calling card of type one emergence.

Type Two Emergence: This type of dynamic change might be defined as *Spectrum Emergence*. There is a gradual change and recognition of this change. There is evolutionary rather than

revolutionary change—that is only acknowledged as revolutionary at some later point. Our broken windows scenario exemplifies this second form of emergence. Recognition and acceptance of the change will diffuse slowly and often in stages (Rogers, 2003). We can begin to see/anticipate outcomes as the diffusion takes place.

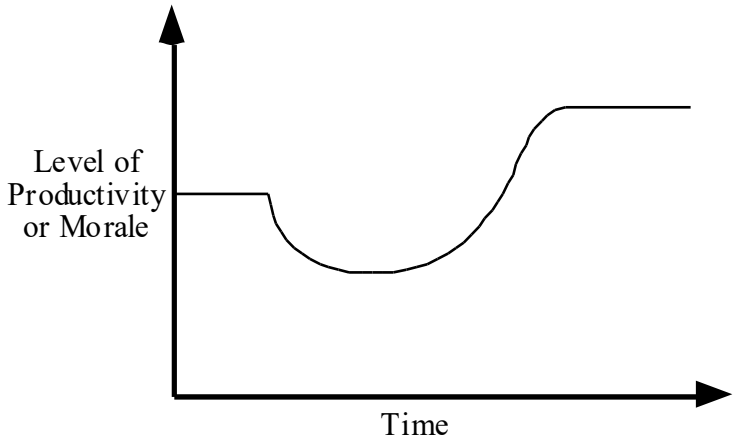
We can return to the story of the frog. This time, we place the frog in a slowly warming pot of water. Something remarkable happens (at least hypothetically) when we place a frog in a cool pot of water and slowly heat the water. The frog may not notice the gradual increase in temperature. There is no dramatic signal that would motivate the frog to jump for their life. As a frog, we must have higher levels of sensitivity to the shifting states. As a sensitive frog, we will live, jumping out well before it becomes too late. We will boil to death if we are a stubborn frog that denies the reality of a rising temperature. Discernment, feedback sensitivity, and adjustments---rather than reflexive decision-making—dominate our adaptive behaviors with Spectrum Emergence. A bit of distal assessment and slow thinking will also be of great value if we are human beings who confront the challenge of Spectrum Emergence.

Emergence and the Change Curve: The demand for change is often apparent when facing either a type one or type two emergence. This change might occur "on time" or "too late" (in the case of the stubborn frog). It might be a change that requires major adjustments (revolution) or minor tweaking (evolution). Regardless of the timing or size of the change, it will usually lead to a temporary (perhaps even permanent) reduction in productivity and morale among those facing and engaged in the change (see Graph Three).

As things get "worse," there will be an inclination to go back to the old way (which introduces yet another change and the creation of a new change curve). Alternatively, there is the temptation to try something else (introducing another change

curve). Organizations often go through a succession of changes, with each one further reducing productivity and morale (see Graph Three). The process of change itself becomes the major issue. Ralph Stacey (1996) might suggest that the organization has moved beyond the states of complication and complexity to one of Anarchy.

Graph Three: The Change Curve



Type one emergence is likely to produce a deeper change curve than type two emergence. The change curve is likely to be deeper if: (1) the concept of emergence (and newness that it produces) is not understood or anticipated, (2) the emergence impacts broadly on the system, and (3) the emergence is not accompanied by significant training, education, or the potentiality of changes. We often find not only that productivity and morale drop with the introduction of emergent newness, but also that the drop is energized by the "surprising" impact of the change. Even if it is a positive surprise (as in the case of the broken windows initiative) adjustments that are suddenly needed can be quite stressful.

Clearly, the change curve that is produced by emergence must be carefully managed. Dorothy, you should take note. A broad-based recognition is needed of the complexity involved in any major innovation or change project. Realistic expectations must be formulated regarding the length of time needed for the innovation to be tested or for the change to "take hold." Clearly defined criteria and timelines for evaluation of the innovation or change must be established. Sufficient resources must be devoted to the training and education required for the innovation or change to be effectively engaged.

Conclusions

COVID has revealed the need for us leaders to learn to reshape our CAS over time. That means, when embracing Salus-P3, we have to learn how Attractors are built and impact things—sometimes predictably, sometimes unexpectedly. About 15 years ago, one of us [Jeremy Fish] was struggling with "Sacred Cows" at his job:

> My conclusion there was that our Sacred Cows were "frozen dilemmas" that had been oversimplified by prior leaders into Right/Wrong declarations. They became "sacred cows" because no one knew where they came from, but everyone knew if you crossed into that zone, you'd get pummeled by the institutional bullies who see their cause as maintaining Sacred Cows.

Sacred cows might be difficult to address if they are framed as polarities. They become dilemmas that are frozen in place by two opposing positions. A Sacred mythology is created when any social system is faced with the challenge of staying in the same valley or entering a new valley, "do not tread here or you will die!!"Don't even consider staying in the same valley ("we must innovate or die!"). Don't even consider moving into the new valley ("we have no business making these big changes!") It was not long after successfully confronting and leading

transformation around a Sacred Cow at his workplace that Jeremy found he needed to leave from a place he had loved to work for over 2 decades to start fresh in a new role in a new place. There is a price to be paid for melting frozen Sacred Cows.

A strong, decisive leader enters to preclude any collective decision regarding next steps that will take into account both sides of the polarity. The river gets rough when only one option is considered. Soon, the strong leader is cast out, having failed to make the right decision in the midst of turbulence. There is more change. The change curves multiply. New valleys are discovered. Old valleys are rediscovered. Eventually, there comes an appreciation of the complex (and hopefully adaptive) nature of the world through which we are travelling individually and collectively. In our next chapter, we focus specifically on the turbulent, often bifurcating and changing journey of contemporary healthcare leaders and entire healthcare systems.

Chapter Eleven

Salus Perspectives, Policies and Practices

Probing is a trial-and-error (seeking oscillating) process in which many different options are examined and even tested. It plays a critical role in any evolutionary process. In essence, an organism that is seeking to adapt to a changing condition or environment begins by trying out a variety of behaviors. It will fluctuate in its behavior and become temporarily unpredictable, as in the case of the ball's oscillation back and forth at the top of the warped plane.

When pushed to the extreme, managers build up barriers to the point where there is only a single pathway down the warped plane. Over time, these can develop into full-blown silos, with hard boundaries and barriers. Middle management wants everything to be predictable and controlled (that is the fundamental nature of being in a frozen state).

Inserting a fixed, first-order silo into healthcare results in a lowering of any higher-order learning and thinking. Unfortunately, second-order learning and related second-order slow thinking are required when making dynamic adaptations to unique challenges and events.

Dithering can be very damaging both physically and psychologically if sustained for an extended period of time. There is action, but it is ineffective and ultimately powerless action. This scurrying back and forth is much like what occurs among small marsupials on the African savannah when they are faced with choosing what to do when facing a threatening entity, such as a lion. All too often, the scurry can gain the attention of the lion. The marsupial can easily be devoured. As human beings, we are similarly vulnerable when we are engaged in this kind of mindless, fast-thinking action. Scurrying back and forth is oscillation. Permanent oscillation can become a frozen-like state.

The quality of problem-solving and decision-making, as well as the creativity that attends these critical thinking processes, will significantly improve with the invitation of new members, new perspectives, and more diverse representation on the middle management team. It seems that something "new" tends to unfreeze people and teams.

There is a sustained preference among human beings for systems that are clear (or at least complicated). However, we often live and work in environments that are complex or even chaotic, especially in the realm of contemporary health care.

Being caught off guard in over-simplified and frozen thinking states can be overwhelming and lead to deeper questioning, stirred by fear and awe at the rapid turn of events. It is easy to scurry back and forth in our fast (desperate) thinking and acting.

COVID-19's influence on healthcare was to push it into the short-circuit toward chaos in a matter of weeks to months. Our

healthcare systems were plunged into a vast and choppy sea of chaos.

Clearly, the change curve that is produced by emergence must be carefully managed—though broad-based recognition of the complexity involved in any major change project and through the formulation of realistic expectations regarding the length of time needed for the change to "take hold", clearly defined criteria and timelines for evaluation of the change, and devotion of sufficient resources to the training and education required for the change to be effectively engaged.

A strong decisive leader enters to preclude any collective decision regarding next steps that takes into account both sides of the polarity. The river gets rough when only one option is considered. Soon, the strong leader is cast out, having failed to make the right decision in the midst of turbulence. There is more change. The change curves multiply. New valleys are discovered. Old valleys are rediscovered. Eventually, there comes an appreciation of the complex (and hopefully adaptive) nature of the world through which we are travelling individually and collectively.

Chapter Twelve

Delivering Health Care in Complex Adaptive Systems III: The Diverse Challenges

Dr. Dorothy Wellington

I know that both Caroline and Dr. Bloor perceive my wellness center as being wonderful and something to be emulated. If they only knew . . . I am struggling big time with keeping the center open. There are major financial challenges to be faced and so much unpredictability in the world that is swirling around my center. So, here is my story – including my treatment of Caroline's ailments.

It all started several years after I went independent. I began to realize we needed to see more kids in my practice. Traditional practices focus solely on vaccinations, so most kids stop seeing the doctor after about age 6 until they become sexually active (and need an HPV vaccine) or enter a high-school sport or need a meningitis vaccine before college. But Allostatic Load taught me that children begin down the pathway to ill-health at a very early age – that what happens to us as children has vast impact on our health as adults. Not just Adverse Childhood Events, but many other exposures to environmental toxins, social pressures and the like. I began encouraging my adult patients to have children of their friends and family come see me for thorough Allostatic Assessments.

This got tough, as I began to see into many toxic family relationships and began to learn about how prevalent early sexual exposure was for many children in my community. Some parents stopped bringing their kids because they feared losing their children to CPS if what was happening in their homes leaked out. On a few occasions, things that I learned required that I contact law enforcement and word got out that my practice might risk losing custody of your children. So, I had to adapt and soften some of the questions, but thankfully most of the families continued to bring in their kids and we kept working at helping them develop the nurturing relationships that often alleviate early life stress

and trauma. Again, I felt much more positive about my work and could see, feel and hear all the improvements my patients were finally making with our deep-dive, inter-professional care model.

And, yet, a part of me worried. I was losing money and would not be able to sustain and grow the practice before the money ran out. I decided I needed to add another member to my team, a financial accountant and planner, who might also help my patients as I learned many of them had a large amount of stress related to their own finances and especially the finances of their children and grandchildren who had assumed huge debts to get advanced degrees. I came across Bob, a semi-retired CPA and CFP who was financially independent and looking for something "good I can do to give back for all I've gotten", so he didn't charge much and had a wealth of financial wisdom to share with me, our practice and our patients.

It didn't take Bob long to bring me the news, "Dr. Wellington, you are providing such an amazing community-value here at your clinic, but if something doesn't change, you'll be bankrupt in 6 months…". Ouch, I had hoped I had longer, I couldn't believe how quickly we were burning through the $200,000 seed funding I put into the practice. I hadn't paid myself a penny. Yikes, what am I going to do?

Bob told me I was doing too much for everyone. I was paying for their lab tests, X-Rays, CT Scans, procedures I wasn't able to provide in the clinic. I was giving my patients more than any primary care practice in the county and it was not sustainable. I was either going to have to start charging each person more, open up my practice to more people (even if that meant longer waits to see me and having to shorten visit times), reduce my staffing, or be more intentional on what is covered in the arrangement, meaning re-contracting with all of my patients to clarify a new business plan that remained affordable, yet realistic.

Ugghh. This is the yucky stuff I hate to deal with. Love working with, caring for, and helping people. I kind of hate talking about money. However, there was Bob, giving me some choices, so I had to think it through because I was loving my work again and I was really helping people with our team-approach. So, I was certain about a couple things: Time with my patients and our inter-professional team. Cutting back on those would mean I was returning to what I left – a mediocre practice,

overloaded with superficial short visits and chronically unaddressed challenges, disappointed patients and disappointed me.

Keeping time with patients and a full inter-professional team meant I had to make tough decisions. I decided to stop paying for labs, X-rays, and specialty procedures as part of the "Direct Primary Care Package". That meant I needed to re-contract with all of my patients and make clear that moving forward I would either need to charge them more or reduce coverage for labs, X-rays, CT Scans, and specialist procedures. I was surprised to find 100% were fine with the reduced coverage and wanted to keep their monthly payments affordable. Some told me they could get the tests cheaper online and hadn't told me because I seemed to like the local, much more expensive laboratory. So, we made adjustments in the coverage and our finances began to improve.

Bob also started providing monthly Financial Planning sessions with my patients. I couldn't believe how stressed out they were about their kids and grandkids financial situation. "They can't pay off their student loans with the low-paying jobs out there, they have to get on Medi-Caid because their jobs don't provide health insurance, and they have hundreds of thousands of dollars of student loan debt---for degrees that don't seem to be helping them find jobs." Many of the kids and grandkids were living with their parents or grandparents either at no-cost or low-cost rent.

All of these things were eating away at their sense of agency and self-esteem. Many of the boys were hiding out, playing video games, which had become addictive, so I took some courses on gaming addiction, gambling addiction and others as I began to realize these conditions were eroding the fabric of the families I was caring for. Many of my patients with chronic pain began to reveal much of their pain was related to financial stress and the erosion of relationships in their family due to social media, political polarization, and gaming addiction.

I added "internet toxicity" to my list of Allostatic Load. Bob's workshops really helped with the financial side of things. Many parents began charging limited rent or utility-use fees from their kids and grandkids living with them…something to stimulate the need to get a job no matter what. I learned about Motivational Interviewing and began to help parents recognize paying a small monthly fee would help increase the motivation to work and eventually move out. Letting them stay for free

may seem helpful but was actually contributing to their sense of stasis and stagnation.

So, it was about this time that I received a referral from my good friend, Dr. Bloor, about his patient Caroline. She had a long and challenging history of many concerning health conditions, relationship strife, family-of-origin trauma, and adverse interactions with physicians and the healthcare system. She was worn out and barely able to keep working, wondering if she would ever feel lively again. I was glad to take the referral and appreciated that Dr. B wrote up a comprehensive history – including his own mistakes and misdirections with Caroline's care, like sending her to many specialists who further complicated her sense of her own health and needs.

She had all the conditions chronically ill women tend to accumulate – systemic candida, adrenal fatigue, chronic fatigue syndrome, autoimmune disorders, mental and behavioral health conditions, relationship-strife, and generalized exhaustion. She had just spent 6 months seeing dozens of specialists and adding on a vague autoimmune condition to her long list of health conditions. I could see her Allostatic Load was on red alert. She was far past overloaded and on her way to full collapse and despair.

I asked her to bring all her records, any friends or family she felt were most important to her to meet with my entire in-take team and I for 90-120 minutes the following week. She was shocked we had such long visit times. I explained our model. She felt the monthly fee was reasonable and expressed enthusiasm about joining our practice. We discovered many root contributors to her high allostatic load and provided her with extensive guidance on how our team would begin to work with you to overcome the most severe contributors to her ill-health and restore her as fully to health and well-being as was possible. She cried at these words and told us she had given up on feeling better and only assumed the rest of her life would be nothing but pain, suffering, loneliness and despair – a state that made death look inviting to her. She wasn't suicidal, but she experienced a wish for "eternal sleep" on a weekly basis, especially now that her life was fully unravelling, and she feared she would not be able to keep working.

Just as Dr. Bloor had said, Caroline was a rare patient who put the work in right away. She met with our psychologist and began extensive

testing and therapy as part of our 8-week Recovery program. Our dietician added nutritional changes to boost her immune system, energy, and mitochondrial function. We assessed her microbiome and found she had unusually high levels of "toxic bacteria" and insufficient amounts of "healthy bacteria" (bifidis and lactobacillus).

Caroline began a pro-cultivation diet, supplemented initially with restorative pro-biotics and noticed her appetite increasing and her GI symptoms fading within weeks. She began to keep a symptom diary every day and sent our team summaries each week with her own "health index" score that included her allostatic load and her own efforts to improve her personal resilience and her sense of community in her life. She began to assemble a new Family of Choice to complement her often disheartening Family of Origin. She told those friends who were like family that they were like family to her and shared letters expressing to them how much her relationship with them meant to her.

Slowly but surely our discussions moved away from the long list of conditions she was labelled with by other doctors and focused on all of her sustained efforts to energize her life with full agency and self-advocacy. She began to walk daily, slowly increasing her pace to get her heart rate into the Orange Zone, fast enough to raise metabolic rates, slow enough to be sustained for 20-30 minutes in the "moderate exertion" range. This is the most health producing level of exercise and she did it daily, eventually far exceeding the recommended 150 minutes per week. She added lifting weights, something she had never tried as she was not interested in building bulky muscles. Our PT taught her how to do high reps and high intensity interval training which adds muscle mass in trim ways while improving our overall health and weight.

Within about 9 months Caroline had advanced so far she began to suggest maybe she could join our team as a therapist. She even offered to do it for free. She also let me know she used to help run a therapy school and thought it would be great to bring therapy students into our practice. They could provide services while learning about primary care behavioral health integration. She knew of a local school that would be excited about partnering with our practice. I jumped at the idea because I loved teaching and I wanted to see our model spread to other clinics in our community.

She was soon supervising these students, and we were able to expand and extend our therapy engagement with our growing patient population. I started getting medical students from our local Medical School and Family Medicine Residents from a nearby residency program. Our dietician began bringing students in as well. Soon, we had a dynamic inter-professional workforce development program going and we received State Grants to support our work.

Suddenly, I found we were becoming the most innovative community practice in our county. Local electeds began to visit the clinic as our patients told them stories about how healthcare ought to be. These electeds, in turn, helped us access more grants and soon we had a major benefactor who donated $1M to our clinic so we could begin to care for people who couldn't afford our monthly payment. I was delighted to sign-up people who had no insurance and no funds to pay for healthcare. They couldn't believe the breadth of services we were providing and soon we had dozens of impoverished folks joining our practice.

However, I must say, it has not all been great. I underestimated the natural dramas that would emerge when bringing together so many health professionals into a small space in our practice. Some of our early professionals found the workload intimidating and moved on. We had inter-professional, cultural conflicts about how much we shared with each other, how we documented in the chart, what we prioritized. We bickered over our Allostatic Load definitions, finding the literature rather thin on how best to define this important new approach to health. We also attracted some patients who even we were unable to help, angry patients who threatened our staff, sent hateful messages or phone calls when they couldn't get the pain medication they wanted. We continued to have some former patients who's children were being abused sue our practice, which was very distracting, time-consuming, and financially threatening. Thankfully, Bob helped us negotiate settlements with them and things calmed down.

All-in-all it was the best decision of my career, though full of risk and peril, it has been highly rewarding and my own health has improved. I take much better care of my patients and I take much better care of myself and my family. I have delegated a lot of the patient communications, so I am interrupted far less at home and have no charting to do after hours as we share the charting responsibilities and I'm able to complete my

notes because I'm seeing fewer patients everyday with more time. I've had to make many painful business decisions, have become a sophisticated grant-writer, and have to manage complex financial situations on a near weekly basis.

Yet we've kept our practice open to new patients or 5 years now and have grown to over 500 patients as initially envisioned. Now, I'd like to hire a new family physician to join and expand our model. I won't be able to pay them as much as the local health system or Kaiser, but I think they will be inspired by our work environment and persuaded to take lower pay for a greater sense of relationship, autonomy, self-mastery, and purpose.

I'm told these are the four largest contributors to our intrinsic (self-directed) motivation in life. Some call it RAMP. We teach it to our patients, too. It doesn't mean money doesn't matter. It just means there are more important things in our lives than money. Our relationships. Our sense of choice or autonomy (some call this liberty or freedom). Our sense of self-mastery – our capabilities and skills. Our sense of purpose – the "why" of our lives. What means to most to us. What matters most. I remind my patients when they declare, "What is the matter with me?" that they really need to be asking, "What matters most to me?" That might just be the wisest lesson I have learned in my career. Rather than "no money, no mission", I say "no mission, no money." The money in our case has followed the mission. I am a mission-driven family physician who trusts and appreciates other health professionals – to join me as Advanced Primary Care Clinicians, providing deep-dive, full-spectrum care as a team.

In this chapter, we are ready to turn in more detail to mid-21st Century health care and the way in which our Salus-based understanding and appreciation of complex adaptive systems might assist in addressing the elusive contemporary problems that exist in American (and most other) health care system. We are now prepared to further examine the life and work of Dr. Dorothy Wellington.

Our attention turns first to the matter of understanding health care. This understanding starts with the recognition of the

distinctive issues facing mid-21st-century healthcare, which is also required. This means identifying, living with, and acting in an environment of volatility, uncertainty, complexity, and ambiguity (VUCA) – as well as turbulence and contradiction (VUCA-Plus). Conditions that Dorothy Wellington faces in her clinic. In this chapter and our previous chapter, we have focused on complexity—but recognized that the other environmental characteristics of VUCA-Plus are closely associated with and amplified by the conditions of complexity.

Given VUCA-Plus, we must then recognize that we are facing issues that are problems, dilemmas, paradox and mysteries – and not just readily solvable puzzles. An abundance of puzzles may exist in the wonderland of Serenity; however, they are often outweighed by the problems, dilemmas, paradox and mysteries of the VUCA-Plus-saturated world of mid-21st-century healthcare. We have previously summarized the distinctive features of these different types of challenging issues. We will now begin to address these three challenges & identify some of the tools that are available in seeking to understand them. Dorothy should take note.

We turn next to ways in which predictions and forecasts might best be made given the complexity (and hoped-for adaptivity) of contemporary health care systems--as well as the VUCA-Plus environment in which these systems are operating. We turn finally to the value inherent in high-performance teams as sources of guidance in navigating health care systems that are saturated with VUCA-Plus challenges. Specifically, it is in the promotion of Salus-P3 aligned teamwork and the assembly of diverse, collective wisdom that these complex systems are best navigated. We invite Dorothy to consider not "going it alone." How does she build an effective team that helps her navigate the turbulent waters of VUCA-Plus? What is the nature and dynamics of a team that is not lured into the tranquil, conflict-free, but distorted world of Serenity and SC²-Plus?

Understanding

The first step in any basic understanding of the challenges facing a health care team is discernment regarding the nature of the issue(s) being addressed. Are these issues simple and readily solved? They might be assigned Stacey's label of "simple" and identified as what Snowden calls part of a "clear" system. They might even be considered "complicated" with several elements under consideration. These puzzles and simple problems can usually be solved by a single person with appropriate expertise. Dorothy can go it alone if she is only facing simple puzzles in a clear system.

The more complicated the issue being addressed, the more diverse the required expertise. This is especially the case when the issue becomes complex. There are not just many elements and agents (as is the case with complicated issues). When an issue is complex, all of the elements and agents associated with the issue are intertwined and interdependent (Miller and Page, 2007). They are related through mutual local and distant feedback. Relevant information comes from multiple sources.

Complexity and Teams with Diversity

Teams may not be the right approach to addressing simple puzzles and problems. When we are faced with complex challenges (where dilemmas and paradoxes are abundant), we find ourselves needing many people involved in solving and resolving the challenges. Dorothy might wish to consider building a team. It is in the realm of complexity that the rising value of teamwork emerges. In some ways, this is like the dynamic of "strange attractors." When our challenges flow into full levels of complexity, then the team becomes essential to the navigation of success. We are no longer solving or even resolving--we are navigating in the realm of complexity. The diversity of perspectives and experiences to be found in a carefully constructed and effectively functioning team are essential in addressing complex health care problems, dilemmas and polarities.

In rapid and dynamic shifts between states, often Mystery emerges, where even effective navigation can become impossible no matter how well-functioning the team. Given the matter of life and death that is abundant in health care systems, it is particularly important for any team to acknowledge those elements in the operation of their system that are beyond their control—or even predictive power. Thus, teams must become facile at recognizing when complexity blurs into mystery and chaos---and recognize the limits even of teams to successfully navigate through mystery.

A key example of a massive mystery in US healthcare is the annual process of identifying nearly $1 trillion in "unnecessary care and waste." What is also called "low-value care" has shown no substantial progress in reducing this apparent waste. How is it that we can clearly identify a massive source of low-value spending, while facing mounting poverty, hunger, those living without a house, climate challenges, educational challenges, and mounting student debt? A 20% reduction in waste in healthcare could launch massive new public health, educational, and environmental initiatives that could profoundly impact the health and well-being of Americans. Yet, year after year, we remark on the massive nature of waste and remain mystified about how to begin to move healthcare toward becoming a less wasteful industry.

Why does that happen? VUCA-Plus conditions certainly are a contributing factor. After all, the American healthcare system is among the most complex human systems in the world. Payment & health delivery systems baffle even the most expert physicians, nurses, administrators, and financial people across the nation. Even massive new legislation, like the Affordable Care Act has generally failed to reduce unnecessary and low-value aspects of healthcare spending. Many states are in the midst of attempting to constrain the total cost of healthcare in their states. Led by Massachusetts, state legislatures have boldly confronted the many challenges of VUCA-Plus. Yet 10 years or more into this effort, most states have experienced rather limited results in cost containment.

Several years ago, the State of California entered the arena of total cost of care containment, taking lessons from many other states in creating a new Office of Healthcare Affordability with an expansive mandate to constrain the rate of inflation in total healthcare spending and re-directing investments toward higher-value care such as primary care, behavioral health, and health equity. Impactful results will likely require broad inter-professional teams that address healthcare spending through the lens of complexity, rather than hoping single-lever solutions will produce needed results of improved health outcomes with more equitable and responsible spending patterns.

Any effectively operating team that Dorothy might build will be thoughtful of the difficult and often emotionally difficult discernment to be made regarding those issues that they can (at least in part) control and those which are outside their control. The latter issues require a realistic assessment of what can be done to align with and (if necessary) buffer the impact of an external force and circumstance, such as those found in many VUCA-Plus environments—especially when innovation is being fostered.

Flocking and Feedback

Healthcare teams, like sophisticated flocks of geese, can adapt and flourish through a multitude of dynamic conditions and threats---through local and distant feedback loops, streamlining movements that reduce energy consumption, and collaborative leadership with simple, adaptable rules that save not just the individual goose from the hawk, but the entire flock in an instant. Collective intelligence emerges in high-performance teams---the whole becomes greater than the sum of the parts. The rag-tag collection of novices with a computer and high-levels of teamwork outperforms the most talented expert on the most complex challenges facing his or her industry.

Yet the science of Complex Adaptive Systems (CAS) in healthcare remains scant, though compelling. It is not surprising, then, that

a complex spectrum of approaches to Complex Adaptive Systems in healthcare have emerged. A simple basic rule in healthcare literature is "we will publish our best sense of the current state of things in a peer-review way to evolve our learning." Thus, publishing on CAS within the context of healthcare is in itself, complex, emergent, and our brief overview in this book of some of the prominent examples in the healthcare literature is an attempt to find patterns and attractors to pull us and healthcare toward a better understanding of and navigation within CAS.

Complex Adaptive Systems likely represent the highest order of evidentiary framework within the realm of VUCA Plus. There are some early signs of attempting to integrate CAS into healthcare organizational dynamics, in particular within Primary Healthcare---a high-value component of healthcare systems that is often neglected, under-resourced, and misunderstood. Widespread variability in resource allocation and centrality across nations is also all too common.

Most European countries invest heavily in primary healthcare, approaching 15-20% of all healthcare spending, while in the United States, less than 5% of total spending is on primary healthcare. Primary Healthcare may be suffering from the machine-thinking model of healthcare in the United States, where Fee-for-Service payment models favor procedural actions by clinicians far more than cognitive engagement by clinicians and healthcare teams. It is certainly suffering in an innovative healthcare clinic, such as Dorothy Wellington established, which features the cutting-edge of primary healthcare.

The Meikirch Model

Bircher and Hahn (F1000Research 2016) take us on a wild exploration of Meikirch Model of health in the broader context of complexity and how it may apply to the field of primary healthcare. The Meikirch Model describes health in this fashion:

1. Health is a dynamic state of wellbeing emergent from conducive interactions between individual's potentials, life demands, and social and environmental determinants.
2. Health results throughout the life course when an individual's potentials and social and environmental determinants suffice to respond satisfactorily to the demands of life.
3. Life's demands can be physiological, psychosocial, and environmental and vary across individuals and contexts, but in every case unsatisfactory responses lead to disease.

This model draws us away from a simplified, linear cause-and-effect definition of disease as being caused by a single intrusion into the person's body that causes a specific disease. The reductionistic single cause, single disease, single cure (by reversing the action of the single-cause) model of healthcare can only explain about 20% of the conditions in any typical primary healthcare setting. Yet it remains the dominant mindset of most physicians and health systems.

In stark contrast, 80% of people eventually develop chronic, complex conditions, often with multiple contributing factors across biology, psychology, sociology, and the environment, that may improve with complex treatments yet are not curable. This, then, is the domain of chronic, complexity, and primary healthcare---which only receives 5% of the overall healthcare resources in the United States yet faces the most complex challenges in healthcare. We Americans apparently favor paying for complicated chances for immediate fixes and cures, while underpaying for complex chances for improved quality and quantity of life.

And our methods for assessing the efficacy of treatments rely solely on the single-cause, single-disease, single-treatment model, with the overreliance on Randomized Controlled Trials. The use of the methods becomes highly challenging when causes are not

certain and when treatments are highly complex, as is true with most chronic, complex conditions. The authors point out that a combination of traditional, Newtonian natural science (causal) and a broader Meikirchian complexity science definition of health is necessary to advance our ability to improve the lives of those seeking out healthcare.

Complexity and Relationships

Complexity also draws our attention from the individuals toward the interactions and relationships between individuals, thus allowing us to recognize the centrality of the primary healthcare physician relationship with the broader healthcare team, patient, and family. It is only the individual's biology that matters and is addressed with single-cause, single-disease, single-cure medicine. In the broader context of complexity, such as Dorothy presents, we must focus on the interactions and relationships across the many people involved in the care of the patient. Bircher and Hahn (F1000Research 2016) conclude their article with this moving description of critical nature of the physician-patient relationship to pursuing complexity-engaging health:

> For this purpose [of patient-derived, bottom-up insights and health] mutually trusting patient-physician interactions are critical for a successful future; the physician must believe in the patient's abilities to evolve to a new state and must accompany and support him with loving wisdom in this endeavor.

In this new complexity context, the physician shifts from one of being an objective scientific observer who is directing patients to consume treatments in a prescribed fashion to a being a coach or Sherpa, accompanying the patient on his or her adventure toward a healthier, more satisfying life. Yes, medications and other treatments may be necessary along the way---yet the focus is on that partnership relationship, bringing in many other experts and non-physician professionals to assure all aspects of the person's

health are addressed in a timely and effective fashion by the patient him or herself. Physicians must share this vital relationship with other professionals, providing the team care that is necessary to achieve health.

We must move from the traditional confessional model of an isolated doctor and an isolated patient meeting privately in an exam room, toward a broader engagement across time and space between an effective primary healthcare team and the community they serve together. Newer specialty fields in medicine like Family Medicine, Lifestyle Medicine, Palliative Medicine and Integrative Medicine provide essential relationship-focused, team-based, complex care.

And the evidence is clear, family & primary care teams save lives, decrease disease burden, and limit the reliance on emergency and hospital care in study after study after study. Health systems with a strong foundation in primary healthcare flourish and demonstrate far superior health outcomes for their people than those systems that over-rely on single-cause, single-cure approaches filled with sometimes unnecessary procedures, hospitalizations and ill-suited efforts toward illusive cures.

Episodic Complexity

Shifting from more theoretical constructs of complexity in primary healthcare settings towards a more pragmatic development of a user-friendly tool for hospital physicians to use to identify patients requiring complex care in the hospital setting, we learn from Bandini et al (Bandini 2017) about the importance of what they call episodic complexity in contrast to a patient status complexity (also known as multimorbidity).

The traditional definition of a complex patient is one with two or more chronic conditions. The authors point out that many people who have a complex health status may not require complex engagement with the health system. They give an example of a person with Diabetes, Hypertension, Coronary Artery Disease

and moderate chronic kidney disease being admitted to the hospital with a simple case of community-acquired pneumonia. Although this person clearly meets the traditional definition of being a complex patient, his admission episode is quite simple, requiring a well-established protocol of antibiotics and oxygen, followed by a highly predictable improvement and discharge from the hospital back home. They contrast this with episodic complexity, which they define as having one or more of these characteristics or events during the current hospital episode:

1. Simultaneous instability of 3 or more organ systems
2. Episode requiring more time for thinking, handling relationships, and human/professional confrontations
3. No clear diagnostic/therapeutic paths indicated in Evidence-Based Medicine guidelines
4. Unplanned readmission for same cause within 1 month of D/C
5. Patient not responding to therapy
6. Episode requiring end-of-life decisions

Based on these 6 Episode Complexity factors, they found nearly a third of their patients had Episodic Complexity with a very high correlation with risk of death during hospitalization (25 X higher probability), and a clear connection to increasing the length-of-stay (by 4.5 days on average). By far the most common episodic complexity factor was the increased need for time related to relationships during treatment with the patient, family, and other professionals. One could see how a "disease-focused clinical pathway" that does not incorporate behavioral, relational, and conflictual factors might have a very limited impact on important care outcomes like death and average length of hospital stay. Dorothy Wellington is fully cognizant of these factors.

As pointed out in the Meikirchian model of health, the relationship between agents within a complex adaptive system outweighs the importance of the status of each individual, including, in this case, the patient. The authors also point out that

we miss a great deal of complexity by only focusing on the number of chronic conditions a patient has on the status of the patient. Complexity, as a dynamic system, draws our attention to previously missed ways of seeing the fluid and often turbulent nature of health and healthcare complexity. Stepping back to look through a complexity lens allows us to see more clearly what is actually happening in our healthcare interactions and how best to address previously missed factors that contribute substantially to patient outcomes.

Complexity of Cancer Screening

In their compelling review of complexity interventions in healthcare setting, Braithwaite and associates (Breathwaite 2021) provide a window into successful interventions using complexity science and approaches in healthcare. Each narrative is compelling. However, we will share just one to provide a picture of how the complexity-oriented approach to healthcare quality and safety may improve our capacity to influence healthcare more effectively while developing new leadership skills in the process. Braithwaite and his colleague begin by exploring how a community of clinicians responded to receiving a high-risk result for a cancer screening test. They describe the difference between "care as imagined" vs "care as done." They begin with the linear, mechanistic "imagined care" model most of the clinicians believed was happening:

1. Screening tests carried out to assess risk of cancer being hereditary.
2. Results reported as a high or low risk.
3. People with high-risk result were referred to a genetic service.

The study included multiple clinician stakeholders---surgeons, medical and radiation oncologists, pathologists, and genetic specialists. The research team developed a process map of "referral as done", which revealed several important factors that

greatly reduced & delayed the referral rates---such as fear of overwhelming the patient with a new issue, peri-operative complications that delayed discussion of test results with the patient and family, lack of consensus on who was going to make the referral, and lack of clarity on how to document the results in the electronic medical record.

None of these factors were included in the "referral as imagined" linear process developed at the beginning of the study---yet most real-time quality and performance improvement programs in healthcare are based on the "process as imagined" more than the "process as done." The introduction of frontline Lean efforts such as Kaizen are the rare exception---by developing process maps and real-world workflows and engaging frontline in the process. Yet many of these Kaizen-type efforts have challenges being integrated into the larger healthcare system—often acting more as "idealized retreats" than long-term impactful change processes, in large part due to enormous clinical inertia and leadership inertia that often resist even the best laid out plans for improvements.

So, how did Breathwaite and associates impact the gap between "as imagined" and "as done"? They brought together all the agents (in this case they facilitated meetings together of all the specialists) to clarify roles, review the troubling referral rate completion data, examine barriers, and help create a shared mental model that fostered a whole-system approach to the care of the patients. Deepening the understanding and relationship between the physician agents allowed for meaningful shifts in referral rates that allowed them to achieve results that better matched their expectations while recognizing the many barriers that must be overcome to get there. They did not blame one specialty or another, or scapegoat nurses or care managers---they focused on relationships and increased teamwork across the several specialties to navigate the complexity inherent in what

seemed like a very simple, linear process "as imagined" yet was a mess of barriers and dropped balls "as done."

Current and future healthcare leaders will need to adapt traditional top-down leadership directives toward more agile and flexible collaborative leadership engagement. Breathwaite and associates point out the many shortcomings of strict hierarchical management, which relies on the "putative ability of a single person or executive grouping "at the top' to be in charge, [yet it] can in reality never cope with all the complexities present in a system, let alone an entire chain, health region or jurisdiction." They propose a set of alternative models of leadership and management in complexity, focusing on:

a. Strategies such as distributive leadership
b. Decentralized responsibility
c. Communities of practices
d. Relationship-building
e. Opinion Leaders
f. Shared Mental Models
g. Networked Influence

In essence, they are describing the leadership model of fluid, dynamic, complex systems like the aforementioned flock of birds, school of fish—even a hive of bees. All of these CAS rely on a small number of basic rules, local (move left to avoid an attacking predator) and distant feedback (move north to return to our nesting/spawning site/hive), self-organizing teams, and emerging behaviors that help produce the best outcomes in often novel and productive ways.

Improving healthcare is highly complex. Integrating complexity science and the concept of complex adaptive systems now brings us to the next level of strategic advantage toward predictions and forecasting---perhaps by learning from fields like meteorology on ways to begin to more accurately forecast events like COVID-19

and other epidemics, which tend to drastically disrupt the healthcare environment in seemingly sudden and random ways.

Prediction and Forecasting

As members of the health care community, we are where the meteorologists were in the 1960's before infrared sensors were sent across the globe and into space to help forecast the weather. Although their prediction models are far more sophisticated and accurate than those of the 1960's, people's faith in weather predictions seems no more accurate than in the past, demonstrating that evolved forecasting models in healthcare are still not widely believed at first. We suspect that COVID will produce a new CA5 forecasting models.

Our Salus-P3 appeal is based on our wish that this forecasting model be used beyond infectious diseases. It can be engaged in seeking a better understanding of broader areas of contagion. The model should take into account ideologies, conspiracy theories, and ideas that create their own form of pandemic in the age of worldwide web connections and air travel. Our Salus-P3 hope includes a more insightful understanding and effective treatment of illnesses being suffered by someone like Caroline.

We want to embrace more complex forecasting models, along with the potential for early interventions intended to provide broad community immunity across domains well beyond infectious diseases, as they are traditionally regarded. Through engagement of Salus-P3, we hope that infections of all kinds can be better understood and treated, whether these infections are transmitted by parasite, virus, or bacterium. There are also the equally-as-crippling infections that are transmitted through contagious ideas and ideologies, as well as conspiracy theories, and misinformation-based thoughts that create pandemics of mind and spirit on a nearly continuous basis.

In order to fully appreciate new forecasting models, we must turn first to the traditional model that has dominated health care planning.

Discreet Event Simulation (DES)

DES was first described in the 1950's and piloted in Steel Plants. It is a simulation model that focuses on operational and tactical tweaks that can increase efficiency within a short timeframe based on the flow of a product through time and places. Its key Simulation factors are as follows:

1. Stochastic—allows for random events to disrupt the flow
2. Passive Agent (usually a product or inactive person moving through a workflow)
3. Often focused on a single unit workflow, such as a hospital ward or emergency department when used in healthcare.

DES has been used successful to research workflow improvements in hospital wards, operating rooms, intensive care units, emergency departments, and for specific health conditions such as diabetes and hypertension. Although successful in helping map and improve workflows to be more efficient, it has most often been used in a research framework and there is some indication that less than 10% of DES models in healthcare are ever fully implemented in the settings they are researched.

Although likely helpful in reducing healthcare waste via more efficient workflows in hospital wards and the like, the passive nature of the agents (products and people) in these simulations limits its capacity to realistically simulate live healthcare environments in which many decision-makers and professionals are interacting in vary active ways. Thus, it may more closely function in rather linear, complicated environments in which decisions play a very small role---for example performing a common procedure in an operating room in the most efficient

way, says nothing about whether the procedure performed was necessary or of high-value to the person receiving the procedure.

System Dynamics Simulation (SDS)

SDS also emerged in the 1950's from Systems Theories, incorporating non-linear dynamics to better understand complex behaviors in a system. First developed by Jay Forrester at M.I.T. and best known for its implementation by the Club of Rome for its study of the global environment (Meadows, et. al., 1972), SDS relies heavily on causal feedback loops and policy levers in developing mathematical models within organizational systems. Fundamental to SDS are several principles regarding the nature of systems (Meadows, 2008, p. 188):

Systems

- A system is more than the sum of its parts.
- Many of the interconnections in systems operate through the flow of information.
- The least obvious part of the system, its function or purpose, is often the most crucial determinant of the system's behavior.
- System structure is the source of system behavior. System behavior reveals itself as a series of events over time.

Unlike DES models, which tend to focus on single-unit workflows, SDS allows for broader simulations across several work units with dynamic feedback loops providing causal impacts on product flow. The key factors of SDS for complex systems are as follows:

1. Non-stochastic (non-random)
2. Passive agents (products, people, groups of people, work units)
3. Causal Feedback Loops (provides dynamic nature of the system)

4. Policy levers—allows for scenario planning via iterations using different policy approaches

One of the most widely used illustrations regarding the use of SDS modeling concerns management of the deer population on the Kaibab plateau in Arizona. In building a policy that focuses on the predatory population (mountain lions), deer population, and forest on the plateau, it is all too easy to end up with a plateau that has no deer, predators, or trees. A SDS model shows how this can occur:
https://www.bing.com/videos/riverview/relatedvideo?&q=System+Dynamic+Model+Examples&&mid=894CEC12390F6B839F00894CEC12390F6B839F00&&FORM=VRDGAR

In extending the Kaibab analysis to our entire world, it is shocking to witness the death of an entire global system through the use of SDS modeling (as engaged by the Club of Rome).

Unfortunately, like DES, the agents in the SDS form of modeling are passive---meaning they operate more like widgets or products than fully functioning decision-makers, which we find in the real-world. SDS also lacks the random interjection of unanticipated changes or impacts from unexpected decisions being made, as also happens in the real world of healthcare.

Patients are not passive products passing through workstations as imagined by early Scientific Method (machine-focused) assembly lines of the auto-industry and many other manufacturing industries that laid the groundwork for both DES and SDS modeling. Both of these forecasting simulation models are highly sophisticated and can play an important role in moving the efficiency needle of healthcare, yet neither can robustly challenge our broader need to rethink and re-imagine healthcare systems. How might a DES or SDS model guide us as we try to identify and broadly invest in the most impactful and cost-effective ways of improving the health of our nation?

Both DES and SDS are sometimes termed "compartmentalized simulations" in that they allow for simulations of contained systems in equilibrium, which can limit the generalizability of their results outside of the studied system. They also do not allow for disequilibrium or allostatic states often found in natural environments where lower-level dynamics can suddenly shift into new unpredictable states due to external forces or accumulation of influences that lead to a tipping point into a higher-level state, such as water going from ice to fluid to steam, when shifted from 32 → 33 degrees and 211 → 212 degrees in very non-linear fashion.

Although both DES and SDS modeling are increasing rapidly in healthcare as we develop more robust data-bases to allow for more sophisticated simulations---we are also seeing a rise in Hybrid Modeling (combining 2 or more simulation models such as DES and SDS) to better simulate real-world healthcare events as well as the emergence of a newer, more effective way to simulate complex systems with active agents who make decisions and interact with other active agents in more complex and random ways, called Agent-Based Simulation (ABS).

Agent-Based Modeling

ABS also emerged as a theory in the 1950's. Yet it did not develop into functional simulations until the 1990's. This is when computer capabilities allowed for its more complex and dynamic simulation processes. ABS's original broad use emerged via the gaming industry in the Game of Life—a complex game that allows for autonomous (active) agents to make decisions that can lead to the expansion of life or death in themselves and their near neighbors. As Nigel Gilbert (2008, p. 1) has noted: "Agent-based simulation has become increasingly popular as a modeling approach . . . because it enables one to build models where individual entities and their interactions are directly represented."

Some examples of ABS analyses resemble those used by SDS in its modeling of the Kabab plateau ecosystem. Specifically, ABS has been used to model Wolves, Sheep, and Grass. This model illustrates a dynamic interplay of populations based on initial population size and reproduction rates. It allows for very realistic predictions of population dynamics in US parks: https://ccl.northwestern.edu/netlogo/models/WolfSheepPredation

Compared to our two prior models, ABS has an attractive array of factors—beyond just the representation of individual actors—that increase its capacity to simulate reality in healthcare:

1. Stochastic—allows for random events and decisions to impact outcomes
2. Active Agents—agents are active decision-makers, not simple products or passive people flowing through a system.
3. Feedback loops---autonomous, active agents interact with each other within the context of the simulation, producing both immediate and delayed impacts on outcomes of the system.
4. Emergence—allows for emergent behaviors to impact the broader environment of the simulation.

Most agent-based models are composed of numerous agents that exist at various scales. The agents might be individuals, groups, organizations, or entire communities. These models also require some mode of decision-making—usually a mode that is rather simple and straightforward. A third requirement of an ABM is that it includes some process for bringing about change in the behavior of participating agents. Learning and adaptation occur, leading to the modeling of diffusion of ideas and to the tipping points made "famous" by Malcolm Gladwell (2002). Fourth, an agent-based model requires a "field" (topology) on which the agents interact with one another. As in the case of SDS, boundaries are established so that an analysis can be conducted

that focuses on the behavior of agents operating in this specific field.

All of this is done so that a computer-based simulation can be engaged to determine ways in which the behavior of a single individual can impact the overall behavior of agents operating in a specific system. Unlike DES and SDS, agent-based modeling opens the door for exploration of the critical, but often elusive, dynamic of *Emergence* that we have often addressed in this book. It is in the capacity of a complex, adaptive system to produce something emergent (absolutely new and surprising) that enables this system to ultimately be most adaptive and capable of higher-order learning and change.

Confronting the Virus on a Warped Plane

System dynamics modeling moves us past the static and mechanistic world of DES. It provides us with a portrait – a "snapshot"—of a system that is complex, with many interrelated parts. Agent-based modeling, in turn, moves us to a computer-based narrative—a "move"—of a dynamic, interacting system. However, neither of these modeling tools conveys something of what it is like to actually navigate through a complex, adaptive system. What is it like from moment to moment when moving through a field (typology) that is dancing—such as in our contemporary world of health care? How might the life of a leader in health care be portrayed on a daily basis, especially when this leader is confronting a powerful, complex challenge such as COVID-19?

To get a concrete sense of this dynamic, ordering process in a complex adaptive system as it relates to COVID-19 in mid-21st Century health care systems, we return to a portrayal of complex adaptive systems we introduced in Chapter Eleven. Using the metaphor of a ball being placed at the top of a sloping plane (thin sheet of metal or plastic) that has been bent and warped (forming ridges and valleys), Conrad Waddington (1977) notes that the ball

will begin to roll straight down the plane until it encounters one of the ridges. At this point, a series of oscillations tends to occur. The ball moves back and forth before it eventually begins to roll down one of the valleys and picks up speed again.

At the start, as the ball is rolling down the warped plane, it encounters the first warp (a ridge with two adjacent valleys). At this point, it tends to oscillate. Oscillations tend to precede bifurcation. At the point when the ball ceases to oscillate and begins to move down one of the adjacent valleys, an irreversible decision has occurred.

Encountering the Virus

This is the dynamic that is operating when a virus leaps from one region of the world (one valley on the plane) to another region. Typically, there is just a small number of infected people who usually have traveled from the original region of infection. The infection can be immediately detected, and the infected person can be quarantined. Nothing occurs. The virus is "stopped in its tracks." It is a matter of perfect timing and fast response. The oscillation in this instance is the moment of decision being made by those in medical authority. Unfortunately, the response is often not timely or fast. Many delaying or deferring questions are asked:

"Are we sure this is the dreaded virus?"

"I thought it was present only in XYZ (name of country or region)."

"This could just be a nasty flu. We certainly don't want to alarm people in this community—they are already stressed out."

"If we announce that one person has been infected and quarantined, then our economy will immediately go down in flames! All because one old person got sick (or) All because that damned tourist went to the wrong country and hung out with the wrong people!"

The identification of delays in any system is critical to understanding its dynamic operations. As we have noted, system theorists (e.g. Meadows, 2008) tell us that one of the most important (and often overlooked) features of any system is the delay function. How long does it take to detect a change that is acting on the system from outside (or inside)? How long does it take to share information with other sectors of the system about this change? How long does it take to act upon the information that has been received and shared? In the case of COVID-19 (and other viruses), a delay of even one day can be devastating. The ball no longer oscillates. It moves into the new valley (infecting residents of this second valley at a high rate).

There is more to say here about the movement of the ball (and the virus) down the new valley. When the ball begins to move down one of the valleys, it usually doesn't roll directly down the center of the valley. Rather, because it entered the valley from an angle (having oscillated among several options before entering the valley), the ball rolls up the side of one of the valley's ridges. The ball then corrects itself by rolling back across the floor of the valley and up the other ridge of the valley, while continuing to move down the valley.

Leaders of the system that is operating in this valley are vacillating. They are moving back and forth regarding what to do next. Ideally, the leaders (and those people who are residing in this second valley) will soon end their vacillation. They make thoughtful decisions in a slow, measured manner (Kahneman, 2011). Those operating in this second valley make quick, yet orderly adjustments and minor changes at this point. Collectively, they are agile, moving in a self-correcting fashion. This is all well and good, provided the system is operating in an optimal manner, with abundant agility.

Tragically, this is not the way things operate in many valleys. What happens when the system is stressed, and levels of anxiety are high? What takes place when there is an invading enemy (such

as COVID-19) that is uncaring about the welfare of people living in the valley and is itself quite agile (and invisible). The oscillation continues. Under these conditions, the natural swings of the ball back and forth down the valley can trigger even more anxiety.

This leads to fast, "knee-jerk" reactions--what behavioral economists call the reliance on inappropriate but convenient "heuristics." Kahneman's fast, habitual (and rigid) thinking takes over. Decisions are made in a chaotic manner. As a result, the ball often swings back and forth even more violently—and may move to yet another valley. This means that the dysfunction of one community or society can result in the virus spreading elsewhere. The blame as well as the virus spreads and intensifies. A perfect storm takes place. We are facing a full- blown, globally destructive pandemic.

Inside the Valley

What does it look like to live and work in a system that experiences the movement of the ball into its own valley? Everyone knows that something terrifying has just come to their organization, community, or society. Things are soon in disarray. Something is about to happen.

Unfortunately, one can only speculate on what will happen under these conditions of disarray or chaos. The oscillations of the ball are unpredictable (as is the spread of the virus). When the ball is swinging widely from one ridge to the other ridge, it has as great a chance of moving over the top of the left ridge into the adjacent valley as it does of moving over the top of the right ridge into that adjacent valley.

Most of the members of a system (organization, community, society) don't really know much about (or perhaps even care much about) either of the adjacent valleys. There is always hope that the ball will continue to roll down the current valley without much oscillation or uncertainty. If it does go to another valley,

then perhaps it will never return to our valley. Someone else will have to deal with the virus. It is no longer our problem.

Clearly, the ball is not done with the change process. The virus has not discontinued its spread to other communities and regions. The oscillation in any one valley can be attributed, at least at times, to the anxiety and inappropriate actions that have been taken. At other times, oscillation can take place because the rate of change (speed of the ball) is simply too great for the valley (society) to handle. The faster the speed, the wider the swings. The ball may have swung too far and actually rolled up over the top of the ridge into the adjacent valley.

As in the case of the initial oscillations that preceded the ball's movement into the second valley, the movement into a third valley is preceded by oscillations, though in this case the oscillations are usually quite large. They are quite visible and bigger than expected (given what has been conveyed by residents of the previous valleys through which the ball rolled). The virus is now well known and even more frightening to all involved. Occupants of all the surrounding valleys are increasingly anxious and are likely, as a result, to operate in an inappropriate, thoughtless manner when the virus hits their own valley. The virus even more easily wins the day, moving from valley to valley.

Learning in a New Valley

If the ball does move over the top of one of the ridges, then it will roll down the side of another valley. A whole new set of parameters will be in operation in the new valley. The systems operating in this valley need to make some immediate adjustments. However, the challenge they face seems to be unlike anything they have seen before. The ball will not be at the top of the valley when it rolls over the top of the ridge. Hence, it is not like a ball that is starting at the top of the warped plane.

Agility is demanded of both the leaders and members of the community residing in this valley. On the one hand, residents of

this new valley have ample opportunity to learn from the mistakes (and successes) of residents in valleys through which the ball rolled (virus invaded). This requires that residents of the new valley talk to those in the other valleys. There can be no isolation or fear of the "other" (those living in the other valleys).

On the other hand, residents of the new valley must "hit the ground running" as the ball (virus) enters their valley. They must learn some new lessons as well as listen to the lessons conveyed by residents of valleys through which the ball has previously rolled. Why must new lessons be learned?

This is because the ball (virus) will never operate in the same manner in the new valley. Its trajectory at the top of the first valley (the inception of the virus) no longer operates. The ball (virus) is now entering each valley from a different angle, at different speeds. It is received in different ways in each valley, depending on levels of anxiety, expertise, and culture-based attitudes about the ball (virus).

A large health care system that downsizes will never be the same as a smaller system that was never large in the first place. A reformed alcoholic will never be the same as a lifelong teetotaler. The reformed alcoholic, for instance, might be more compassionate (or less compassionate) regarding those who are still active drinkers. The wounds caused by downsizing will never really heal. We can never again be indifferent to a threatening pandemic once we have experienced an outbreak of one virus.

Pandora's box can never be closed again—the evils of our world (and the virus) have been let loose and can't be recovered or fully controlled. What about the next virus that will hit our shores? A new virus outbreak is perceived in a different manner from a virus that has been moving through communities for several months. And what about viruses that have been with us for many years and that are only occasionally given much attention?

Multiple Valleys and Multiple Truths: Perhaps We Are the Ball

The challenge and potential harm become even more profound when we recognize that the ball in real life may be residing simultaneously in two or more valleys—as certainly is the case with a virus. Technically, it is a bit different if the single ball splits into two or more balls at the top of the plane or if there were always two or more balls operating all the time on the warped plane.

In the case of the current virus, the ball appears to have split and multiplied – though in the case of COVID-19 there has been some speculation that it actually broke out in several locations, perhaps over an extended period of time. There may have been multiple balls let loose at the top of the plane. The coronavirus, in some form, might actually have been with us for quite a while— in which case the ball is not new to us but has been rolling around our valley undetected or misperceived for an unknown period of time.

We might even come to realize that we are living in several different valleys and can't simply wait for the ball (virus) to leave one valley. As global citizens, we are not only living ourselves in multiple valleys—we are required to embrace multiple truths and perspectives arising from our life in each valley. And we must care about what happens in these other valleys, for we live there too. We are living in and journeying through multiple valleys on a warped plane. Being a global citizen during this challenging era of VUCA plus and COVID-19 is quite a challenge.

What about dancing landscapes? When living on Waddington's warped plane, we are likely to feel that this plane is a dancing landscape. We encounter new balls flipping into our valley. It is a tipping point for us—the unpredictability of the ball entering our valley may be experienced as a dancing change in our life. Is the landscape actually dancing, or is it each of us who is dancing?

Are we actually the ball on the warped plane that is entering a new valley? Are we what is "tipping" over the top of the ridge? Everything changes when one is moving into an unanticipated valley and rolling in a new manner through this new valley. There are new realities and new viruses. As global citizens we feel confused and vulnerable—with considerable justification.

Each ridge is a point of decision. The ball can fall to one side or the other, which path it takes is extremely dependent on initial conditions. A very minor change can switch the path from one attractor - the hole, to a nearby one - missed! Once this bifurcation point has been passed, it may take a very large perturbation to switch attractors again. We say the system has become 'locked' into a particular attractor.

Personal Reflection on a Dancing Landscape

We would suggest that all of us living in mid-21st Century America (and perhaps anywhere else in the world) are living on a dancing landscape. Dorothy Wellington certainly is. This has led her to declare: "Ugghh!" One of us [Jeremy Fish] currently is plugging away at navigation on a warped plane of health care: he is giving talks at several medical schools and overseeing massive shifts in reproductive health care after roe v wade overturned recently. Because of the Supreme Court decision regarding abortion rights, members of the healthcare community in the USA are witnessing a surge in VUCA-Plus challenges. More importantly, every person living in the United States (and elsewhere in the world) is concerned for someone who might have an unwanted pregnancy at some point in life.

The following comments are offered by Jeremy Fish regarding this health care challenge:

> Imagine you are a medical student who wants to do your training back home in Texas. And now you find you will be hunted down like an outlaw if you help someone get an abortion or care for them in the Emergency

department for complications of a home abortion. We have returned to pre-73 "illegal abortions".

Some people in our land believe we can make people illegal and behaviors illegal and they will "go away"

That kind of thinking gets us into no end of trouble again and again and again. Didn't we learn anything from prohibition?

We seem like fast creators and slow learners on many fronts.

I've found my ability to play around with complexity is not that common, so I find ways to provide visuals that seem to help.

Just led our leadership team through a year-long, comprehensive strategic planning process, following these 7 steps:

#1. review, revise, re-broadcast vision statement

#2. SWOT analysis

#3. Scenario planning for strategic options

#4. Smart Goals and Action planning for top 3 strategic levers

#5. Strategic Execution Plan

#6. Resource mapping and allocation to support execution plan #7. Review, reflect, revise strategy.

As usual, my leadership team began rather skeptical and annoyed with me as we are short-staffed and a bit exhausted by COVID disruptions over the last couple years (which I then pointed out was because I as the strategic leader had completely missed COVID coming and how it would impact our brand new program---we were highly adaptive once it hit which was awesome, yet

at a cost that now had exhausted our team and made us vulnerable to deterioration, burn-out, etc.).

I told them that is what happens when only one person is in charge of strategy---we miss more things because of our blind spots. Leadership teams make it much more likely we will cover each other's blind spots by challenging each other and digging deeply into where we need to go.

I had each leader volunteer to lead one step in the strategy process---and, as usual, they performed beyond my expectations (I coached each of them, yet they made the steps their own) and we now have developed a strategy that has changed the way we think and work together already.

So, I have now coached, coaxed, guided, persuaded, nudged, pulled, pushed and driven my leadership team to outperform me in strategy which is a truly rewarding and remarkable experience.

I can say with utter confidence now that the program no longer needs me.

As conveyed in these personal reflections, we believe that the complex challenges facing contemporary heathcare systems in the United States (and elsewhere in the world) require that we "not go it alone." Navigating and learning on a warped plane requires diverse perspectives. Living on a dancing landscape requires shared support and safety.

Understanding is unlikely to take place in an isolated professional silo. Neither prediction nor forecasting will be effective when we are sitting alone at our desk--even if we have a computer to assist us. From a Salus-P3 point of view, teamwork becomes the key ingredient in successful working and living in our mid-21st Century world of health care.

Teamwork

The dynamic nature of team-decision-making can be challenging to maintain and reconvene with each emerging challenge found in complex dilemmas. Complexity has a timeframe that is beyond the control of the decision-makers. It requires teams to engage repeatedly over a span of time, rather than simply a single node of decision. Healthcare is highly complex yet lacks teamwork---so in the polarity of individualism and teamwork, it is distorted too much in favor of individualism, particularly within the physician and leadership cultures.

What does all of this mean? It means too much individual autonomy. One of us usually offers a joke to point this out to doctors. We need to offer gentle jokes as a way to bypass our defensiveness--because as physicians we highly prize our individual autonomy. Someone saying anything negative about this autonomy can appear as though they are betraying the tribe. Here is the joke:

> If a pilot was given the kind of autonomy surgeons have had historically---then they could decide to fly to Brazil to visit their girlfriend on way to taking a plane full of people from Boston to SF, because "hey, I'm the captain of this plane, I go where I want to go".

That is the extreme of individual autonomy, which becomes tyranny in its most extreme form.

Secrets and Elephants

Too many secrets are often held among those working in contemporary healthcare systems. Secrets are a key tool in the promotion of patriarchy and vertical hierarchy. They have a purpose, yet if overdone, they become a source of power over others. This is how cults get their power, through secrets. You must have secrets to keep the Patriarch/ Cult Leader in power, because they are just as flawed as everyone else, yet making them

perfect serves a purpose for the hierarchy. Secrets are not intrinsically bad, yet when overused, they can amplify power and distort things. When we retain secrets and fail to share information with other members of our team or organization, we are likely to fail in our attempt to fully appreciate what is happening all around us.

Given the challenge of secrecy, we propose that consideration be given to a more in-depth dive into individual vs team culture in healthcare. The lens of complexity is required. Why does navigating complexity require teamwork? It is because the issues being confronted are often not straightforward nor easily addressed. Rather, as we have mentioned, the more deeply we dig into many healthcare issues, the more likely we are to find that it is a multidimensional problem. At an even deeper level, we may find that a dilemma, polarity, or mystery underlies this issue.

When digging deeper, we find that it takes "more minds" to acquire a full picture of what is going on. We return to the old Sufi wisdom. Each blind man is touching only part of the elephant and believes that they "know" all of the parameters of the object they are touching. Only when they come together and "compare notes" do they discover that they are touching an elephant. There might be a parallel African proverb: "It takes a village to eat the elephant." North Americans might say, "A journey across the Grand Canyon begins with a single step. A leap of faith at the edge ends at the bottom, not the other side." We will not navigate complexity well in healthcare until we shift toward teamwork in a meaningful way.

Curiosity and Polarities

Curiosity keeps the door open to learning, no matter what the situation. Dorothy is fully aware of and promotes this open door in her clinic. Jeremy offers the following reflections on the constructive role played by curiosity:

> If we can remain curious, then we maintain presence and awareness no matter what is going on. If we remain curious when our spouse is angry about something we have done, then we don't fight. We bond and grow together. Although curiosity may have killed the cat, we believe curiosity is the essential first approach to addressing conflicting issues (polarities).

Polarities are best resolved by remaining engaged with each side of the polarity until we fully appreciate its potential validity and benefit. Only then do we move to the negative side of this polarity. If we move too soon to the negative side and abandon our curiosity regarding each polarity, then we move prematurely to a preference for one or the other polarity. In the face of polarity, we begin either/or thinking. We choose "to play favorites," become attached to specific, limited outcomes, and take up opposition to one of the sides.

We must instead begin with the assumption that both sides of a polarity have their place. It is with a strong sense of curiosity that we engage and seek to appreciate each side of the polarity. Curiosity, in turn, leads to questioning, reality testing, and the introduction of intuition. When we are curious about both sides of a polarity, then we are likely to become curious about what the two sides of the polarity might look like when brought together. It is through this "meta-level" curiosity that we are likely to move eventually toward both/and approaches to the polarizing issue we are addressing--and toward a higher order synthesis of the two sides.

The curiosity pathway leads to spiritual growth, while the preference pathway leads to "winning/losing" and suffering. The middle way incorporates both pathways. This middle way, in turn, leads to greater complexity, which requires multiple perspectives, thoughtful guidance, and reflective help. Diversity and teamwork are required. It is nearly impossible to navigate polarity by ourselves.

Barry Johnson (1996) offers us an excellent book on Polarity Management. Johnson's model of polarity is highly clarifying. It is quite profound—and elegant. One of us [Jeremy Fish] is working on how to integrate this into a major polarity he has been struggling with since arriving 8 years ago to create a new program at his hospital. Jeremy and his team engaged in polarity-based team building so that they might navigate and leverage individual and team-based differences regarding this program. The following observation has been made by Jeremy regarding the use of Johnson's model:

> I am clearly what Johnson would call a Crusader for Teams. I had an epiphany of sorts about 15 years ago that primary care would never achieve its full capacity until teamwork flourished there. One doctor with a different MA for each clinic trying to help one patient navigate an increasingly complex health system has become futile and full of dysfunction, unnecessary suffering, and inadequate resource support to meet the needs being brought there. So, I realized that the program (called Patient Centered Medical Home) was being widely discussed, which was good thing. However, I also realized that this program would not manifest until true teamwork was resourced and created within primary care. I worked at that for about 5 years in the County system, where I was working. We made a good deal of progress. However, this progress was disrupted severely by the creation of EPIC medical record keeping--which reinforced Silo separations of the staff working in primary care.
>
> When I came to John Muir, I came with a growing sense of determination that I would found this program on teamwork. Not just of doctors with doctors, but across the entire community. That work began with partnerships {dyads), then built toward teams, and is now emerging

> toward a genuine sense of a learning, leading, and loving community. This is my vision for our residency program. It has now become a shared vision of everyone in the community—or is at least starting to be shared.
>
> So, I have been fanatical about team building, psychological safety, trust, health conflict navigation, team commitment, and team accountability (rather than top-down). I encourage all of us to take care of each other so we can take care of others (such as the patients).
>
> I see now that we can use the Polarity matrix to move toward heightened strengths of both individual and team dynamics. I think our community will enjoy that approach because we are seeing some of the downsides of teams. And I wasn't quite sure how to address that without looking like I'm giving up on teams.

In this narrative we find the value of understanding and appreciating a specific polarity. We also find the struggle that inevitably occurs when abandoning for a moment one's own firmly held beliefs and preferences. Polarity management is not for the faint of heart!

The Drama of Health Care Polarities

We suggest it is not just curiosity that is required to manage the many polarities arising in contemporary health care systems. Courage is also required to deal with the push toward premature resolution of healthcare-related polarity. Courage is indeed not found among the faint of heart. Courage is required not only because of the requisite setting aside of one's own biases but also because of the powerful forces that arise when confronting the major "life-and-death" polarities that are often found in a health care system.

These forces often take on mythic properties like those conveyed in *Alexander Nevsky*, a Russian movie that was directed by Sergei

Eisenstein, the legendary filmmaker. He first portrays an empty battlefield. It was often a large flat plain (with nearby hills) or even a frozen lake. Eisenstein then offers a series of brief visual images portraying competing armies on this battlefield. He then provides broad screenshots of both assembled armies. He moves back and forth between images of the whole army attacking from the left and images of the other army attacking from the right. Banners and flags representing the values and vision of each army are sequentially portrayed. The scene then moves to a close-up shot of specific protagonists representing each army. The scene shifts from an image of an individual leader or warrior attacking from the left to an image of an opposing leader or warrior attacking from the right side. Then back to the broad screenshots of the two armies racing forward toward one another.

The images shift at an accelerating pace—accompanied by Sergei Prokofiev's pulsating music. Finally, the battle is engaged, with multiple scenes of individual warriors battling one another—and often wounding and killing one another. The music becomes cacophonous. Everything is swirling about. Confusion and chaos abound. Finally, there is calm. The battle is over. Dead warriors are portrayed strewn out over the ground in large numbers. Generals are seen wandering through the body-litter battlefield in great despair. Women are often portrayed searching for their dead loved ones. The music conveys solemnity and grief. There is a crescendo and thundering musical conclusion to this enactment of war.

Each side has its own reason for engaging in warfare (protecting the "fatherland," avenging a travesty, reclaiming long-lost land, etc.) As viewers of an Eisenstein movie, we are enthralled by the dynamic, polarizing action. Using Eisenstein's basic model, we see comparable portrayals of armies in conflict in American and European movies. There are competing leaders, competing images of the "good" and "bad" in all of these movies. Compelling cinematic portraits of conflicts are conveyed that

determine the destiny of tribes, communities, nations—even humankind. These dynamic images of polarized forces take on mythic character.

In real life, we find parallel conflicts among competing "armies" of thought, priorities, and convictions in the world of healthcare. Entire systems are at "war" with one another. There are individual leaders, heroes, and warriors. There are mounting casualties, and the inevitable grieving of lost opportunities, lost careers, and a lost sense of purpose and meaning. Silos are repeatedly competing against other silos. No one side ever actually "wins" the war. Real change is rare. Big, frenzied change is enacted on the "battlefield"; however, these changes ultimately make no difference.

On the battlefield of contemporary healthcare, the casualties mount, as do the costs. Battles are waged. The distribution of power shifts. Yet little is permanently resolved in the world of contemporary American health care.

Schismogenesis in Health Care Systems

The myths and dramatic dances of polarities remind us of a systems concept offered by Gregory Bateson (2000)—based on his observation as an anthropologist studying the dynamics of tribes operating in several parts of the world (mostly New Guinea). He wrote of *Schismogenesis*—a term which refers to the tendency for two systems (organizations, tribes, nations) to polarize. They relate to one another in a manner that drives the two systems further apart from one another or that leads to escalation of similar activities in both systems.

One type of schismogensis is called *Complementary*, meaning that as one system goes in one direction, the other system goes in the opposite direction. For instance, as one tribe becomes more belligerent and active, the other tribe becomes more passive and withdrawn. We see this occurring in many health care systems, with the leader becoming more assertive and his employees

becoming increasingly compliant. Both parties are colluding in making the leader's assertiveness justifiable and acceptable. This complementary form of polarization tends to be long-lasting, and it is deeply embedded, as a rule, in the culture of an organization.

The second type of schismogenetic polarization identified by Bateson is called *Symmetrical*. As one system exhibits higher levels of a specific behavior, the other system will try to match this level. For instance, if one nation builds more rockets, then the rival nation will also have to build more rockets—the classic arms race. In a health care system, this symmetrical dynamic operates when both the leader and the employees tend to become more assertive (or more passively aggressive).

This symmetrical process of polarization is often what we mean by the "vicious circle." It is characterized by exponential growth—the "power law" of contemporary chaos and complexity theorists. This type and level of growth will lead quickly to an explosion and collapse. Typically, we don't find symmetrical polarization to be long-lasting in organizations. Rather, we are likely to witness escalation, collapse, and then a renewal of the symmetrical polarization with new parties being invited to engage in this very dangerous and destructive dance.

One of us [Bill Bergquist] had the opportunity to spend time with Bateson and heard him speak of the great power that arises from schizogenetic polarization. It gains its power from the mythic properties associated with "reason[s]" for the polarization, conflict and accompanying judgments regarding the "virtue" and "rightness" of each tribe's perspectives. As in the case of Eisenstein's portrayal of the battle for one's "homeland," the schizogenetic polarization moves well beyond the realm of problem or even dilemma. Much as in the case of an avalanche or what complexity theorists call a "strange attractor," resources are recruited to bolster each side of the split. A form of nuclear proliferation is engaged. There is no resolution because there is no communication between the two sides. The conflict is ongoing.

Wars are repeatedly waged. Lessons are rarely learned by either party. The death of ideals, visions, and people is inevitable.

The challenge is great in addressing a schizogenetic split within a health care system. It requires that multiple polarities are managed and that the diverse perspectives found in a well-functioning team be fully deployed. The pull toward one side or the other will be great. It is hard to be reflective and appreciative of both sides as they charge one another on a frozen battlefield. Difficult though it might be, there is no other option than to advocate for slow thinking (Kahneman, 2011) and to facilitate the engagement of an appreciative perspective (Bergquist, 2003) regarding the valid perspectives and values to be found among those dressed for battle on both sides.

Conclusions

It strikes us that people's yearning for certainty makes complexity management particularly challenging. People will choose a certain reality that is bad over a complex, uncertain one that holds the potential of being good. We saw that very clearly with COVID-19. Even "herd" oriented folks refused vaccinations for political reasons, it seems, even though the hero they were following got his own vaccines promptly and saw rapid vaccine production as a great victory for his administration. That was a very odd twist to the tale. The hero had battered the scientists so much that we think that message penetrated more firmly than his own self-worshiping "I made the vaccine happen faster" narrative.

Unfortunately, leaders in Health Care can convert "traditionalists" and "skeptics"/ "pragmatists" into Opponents, Rivals, and Enemies. This is either/or thinking taking over. We must instead invite skepticism—we must encourage it—for skeptics are often highly pragmatic folks who know exactly how to make things work as long as their concerns are listened to and incorporated into the design, etc. All too often, we tend to push them out, dismiss their concerns, etc. So-Called "visionary" health care

leaders all too often ridicule the skeptics, thus driving them underground to become saboteurs in many instances.

When embracing a Salus perspective, we must turn to safe, supportive teamwork. We advise Dorothy to move in this direction with her challenged clinic. In operating a clinic, such as the one Dorothy has founded, we must be open to new ideas and new perspectives on the complex world of healthcare in which we are working. Such support, safety, and openness are not easy to find or maintain in an anxiety-filled world that is swirling with VUCA-Plus challenges. Yet, in engaging a Salus practice, someone like Dorothy must find the courage to collaborate with other people in the midst of these challenging conditions. It is not just Dorothy who needs to heed this advice. We must all be curious precisely at the moment when we might wish instead to hide in a corner, a silo – or a Platonic cave.

Chapter Twelve

Salus Perspectives, Policies and Practices

When our challenges flow into full levels of complexity, then the team becomes essential to successful navigation. We are no longer solving or even resolving. We are navigating in the realm of complexity. The diversity of perspectives and experiences to be found in a carefully constructed and effectively functioning team is essential in addressing complex health care problems, dilemmas, and polarities.

In stark contrast, 80% of people eventually develop chronic, complex conditions, often with multiple contributing factors across biology, psychology, sociology, and the environment, that may improve with complex treatments yet are not curable. This, then, is the domain of chronic, complexity, and primary healthcare---which only receives 5% of the overall healthcare resources in the United States yet faces the most complex

challenges in healthcare. It appears we Americans favor paying for complicated chances for immediate fixes and cures, while underpaying for complex chances for improved quality and quantity of life.

We must move from the traditional confessional model of an isolated doctor and an isolated patient meeting privately in an exam room, toward a broader engagement across time and space between an effective primary healthcare team and the community they serve together.

A "disease-focused clinical pathway" that does not incorporate behavioral, relational, and conflictual factors might have very limited impact on important care outcomes like death and average length of hospital stay.

Deepening the understanding and relationship between the physician agents allowed for meaningful shifts in referral rates that allowed them to achieve results that better matched their expectations while recognizing the many barriers that must be overcome to get there. They did not blame one specialty or another, or scapegoat nurses or care managers---they focused on relationships and increased teamwork across the several specialties to navigate the complexity inherent in what seemed like a very simple, linear process "as imagined" yet was a mess of barriers and dropped balls "as done."

It is in the capacity of a complex, adaptive system to produce something that is emergent (absolutely new and surprising) that this system is ultimately most adaptive and capable of higher-order learning and change.

Polarities are best resolved by remaining engaged with each side of the polarity until we fully appreciate its potential validity and benefit. Only then do we move to the negative side of this polarity. If we move too soon to the negative side and abandon our curiosity regarding each polarity, we move prematurely to a preference for one or the other polarity. In the face of polarity, we

begin either/or thinking. We choose "to play favorites," become attached to specific, limited outcomes, and take up opposition to one of the sides.

It is not just curiosity that is required to manage the numerous polarities arising in contemporary healthcare systems. Courage is also required to deal with the push toward premature resolution of health care-related polarity. This level of courage is not found among the faint of heart. Courage is required not only because of the requisite setting aside of one's own biases but also because of the powerful forces that arise when confronting the major "life-and-death" polarities that are often found in a health care system.

The mythic properties associated with "reason[s]" for the polarization, conflict, and accompanying judgments regarding the "virtue" and "rightness" of each tribe's perspectives. As in the case of an avalanche or what complexity theorists call a "strange attractor," resources are recruited to bolster each side of the split. A form of nuclear proliferation is engaged. There is no resolution because there is no communication between the two sides. The conflict is ongoing. Wars are repeatedly waged. Lessons are rarely learned by either party. The death of ideals, visions, and people is inevitable.

Chapter Thirteen

Leadership in the Midst of Heathcare Complexity I: Coaching and Learning

> *The Permanent white water in today's [health care] systems is creating a situation in which institutional leadership patterns are simply inadequate to the challenge . . . The problem is to envision what learning can be, how it can go on, given that the traditional paradigm for conducting it is not designed for the task and is in many ways inadequate under contemporary conditions. We have to learn what learning in permanent white water can be. Peter Vaill (1996)*

We identify specific Salus-based challenges and specific models of leadership in this final chapter in our section on the organizational appeal to sustained health. We continue to focus on adaptive complexity in contemporary health care systems. Our exploration of leadership begins with a consideration of Salus-P3's ways that health care leaders can benefit from not only receiving coaching services but also serving in a coach-like role when working with others in their organization.

We suggest that coaching a team rather than an individual might be particularly appropriate in healthcare, given the complexity of challenges being faced and the need for multiple perspectives in addressing these challenges. We also focus on the empowerment that comes with effective team coaching and the way(s) in which health care issues can be added in an "emergent" manner.

Coaching the Leaders

We have long believed that teamwork in healthcare will struggle to manifest itself until a sufficient and sustainable coaching bench

is developed. When we look at the world's most successful teams, we often find a pattern of outstanding coaches who travel to develop one remarkable team after another. In basketball, one can trace the careers of Phil Jackson and Gregg Popovich. We find dynasty after dynasty moving right along with both of them.

College basketball has seen many coaches with truly stunning lifetime records of national championships year after year. One of us (Jeremy Fish) was a varsity oarsman for the University of California Lightweight Crew in the 1980's. With amazement, he watched first-hand the career of Steve Gladstone, who established dynasty-level National Championship crews at Cal (6), Brown (5), and Yale (3) throughout his 50+ year Coaching Career.

What was Steve's secret sauce? Helping young oarsmen find their sense of purpose and passion for rowing and bring their full measure of effort each and every day they are on the water (Gladstone 2024). Where are the Jacksons, Popovichs, and Gladstones of Healthcare? Likely, they are there, under-recognized and overstretched, trying to instill deep trust and teamwork into their workplace teams, developing small islands of teaming that must engage with otherwise siloed and splintering contexts.

Coaching in Healthcare

Much as is the case in most sectors of American society, coaching initially focused on health care executives, who were provided with 1:1 coaching. This coaching was likely to be provided with substantial success as these senior executives adapt to rising levels of rugged and ever-changing healthcare landscapes (Miller and Page, 2007). However, middle management and frontline team-level coaching have received little attention, resources, or effort to date.

There are some signs of a rising tide around clinicians educating each other using coaching principles, as we see in the writing of Branzetti and associates (Branzetti, *et al.,* 2023). Branzetti points

out that despite the robust supportive evidence for coaching in business literature, it remains rare in the context of healthcare. Yet, in medicine, they indicate evidence has emerged that in an academic medicine context, coaching has demonstrated:

1) Improving faculty well-being, quality of life and resilience
2) Help faculty attain professional goals
3) Increase faculty academic productivity
4) Improve overall clinical learning environment of the institution

These four (4) areas of improvement are vitally important to today's healthcare environment, in which the majority of physicians are now struggling with burnout and fast-rising expectations for clinical productivity. Physicians face mounting challenges in sustaining positive emotional energy and a connection with each other, while often searching for the deeper meaning of their work in mid-21st-century healthcare. As Cassatly and Bergquist observed (Cassatly and Bergquist, 2011), all of these challenges are to be faced in a world where the traditional medical profession "covenant" has been shattered. Physicians can no longer count on finding job security, autonomy, and status as "payment" for extended sacrifices made in attending medical school and meeting the needs of a demanding patient population over a lifetime of medical service.

The Accreditation Council of Graduate Medical Education (the ACGME), which regulates all Physician Residency training in the United States, has been so concerned about erosion of the Clinical Learning Environment that it created a completely new Institutional oversight around 2015 to specifically focus attention on improving the institutional learning environments for Resident Physicians across the USA. Healthcare is experiencing the greatest challenge to work and learning environments since the Flexner Report upheavals in the 1910 – 1920's period.

However, a quick search for "Coaching" and "Healthcare" turns up a scant (though rising) array of articles to help leaders and clinicians in healthcare to increase the role of coaching. One of the few articles was the one we have already cited about medical profession covenants. It was co-authored by one of us (Cassatly and Bergquist, 2011).

Team Coaching

While coaching might be of great benefit to physicians and other healthcare workers in the besieged healthcare systems of mid-21st-century America, the traditional one-on-one coaching model might not be the most appropriate framework for healthcare. It might not be feasible to fulfill coaching needs via a one-on-one model, given the vast number of healthcare workers. While physicians in executive positions now often have some level of access to individual coaching (whether in-person or virtually based), there is simply not enough money or enough trained coaches to offer services for those in healthcare organizations who are not in a leadership role. Furthermore, a wide range of coaching strategies would have to be engaged, given the enormous variety of healthcare workers. Coaching provided to a surgeon would look quite different from that provided to an accounts manager.

A partial answer to this dilemma might be found in shifting our focus from one-on-one coaching toward Team coaching. This collective coaching strategy may help to increase access of all healthcare workers to coaching services, while also beginning to increase our ability to improve teamwork across the spectrum of healthcare environments and professions. There is a growing body of Team Coaching literature that indicates this approach may take longer to establish yet improve teamwork across a variety of professions, including healthcare. Healthcare leaders have been calling for silo-busting, team-building transformations for decades, yet may not realize that this state will not be fully

realized until enough Health Team Coaches are developed in the model of great coaches like Jackson, Popovich, and Gladstone.

Yet, even amongst international leaders in Team Coaching, we find we are early in the process of fully understanding the best approaches and competencies required for team-coaching: In an extraordinary Podcast including David Clutterback, Marita Fridjhon, Jennifer Briton, Ruth Wagament, Peter Hawkins and Phil Sandhal—godparents of Team Coaching—we find even our thought leaders feel we are 20-30 years behind our understanding of one-on-one coaching (Clutterback, et al, 2016). A simple search of Google for Team Coaching reveals 9,000 articles, demonstrating an explosion of research indicating our understanding is accelerating and the impact of Team Coaching is likely to be lasting.

In this Team Zone Podcast, Clutterback and his associates also point out the vital importance of Team Coaching leading to Self-Coaching Teams—a concept that aligns well with Complex Adaptive Systems in which Self-Organizing Groups / Teams / Communities are the engine of emergent phenomena and behaviors that push an organization into a future state over time. Teams that coach themselves appear to have four key components (Walsh, 2021). Two of these components concern "what a team is doing." The other two concern "what a team is being":

2 Things Self-Coaching Teams are doing:

1) Uses communication to deepen relationships and connections

2) Lives in commitment to collective and ongoing learning

2 Things Self-Coaching Teams are being:

1) Creates a space of deep trust and psychological safety

2) Aware of what's not being expressed in the room and brings it to light.

The challenge is to create the scale and scope of initiatives necessary to spread Team Coaching throughout the complex environment of healthcare. We likely need external coaches to develop internal coaches throughout the healthcare system, including physician leaders. Some in other industries are looking to shift from a "manager" to a "coach" role for middle management to achieve this aspiration for self-coaching teams:

In 2015, one of the top priorities of senior executives in the business community was the transformation of managers into coaches. In this important *Harvard Review* essay, Keith Ferrazzi (2015) describes six (6) ways organizations and leaders can lead this important transformation:

1) Encourage peer-to-peer coaching

2) Create coaching mentorship partnerships

3) Tap into coaching already present in managers

4) Prioritizing learning and daily learning activities

5) Use one-on-one check-ins to support coaching efforts

6) Provide or seek formal coach training for managers

There are indications in many industries that positive manager-employee relationships are essential to employee engagement, well-being, productivity, and desire to stay in an organization (Dennebis, 2023). Yet in one large study across the US and UK, the authors found 49% of employees feel their own manager lacks skill in providing important feedback to the employee.

Since over 70% of America's Physicians are now employed by an organization—rather than serving as independent operatives—their collective well-being, engagement, and alignment are likely to be well served by increasing their supervisors and managers skills in coaching. Physician alignment and engagement remain top-tier priorities across America's healthcare sector. Team-

coaching and self-coaching teams may just be the right pathway to achieve that crucial physician engagement and alignment.

Leader as Coach I: Open to Empowerment

We turn now to a closely related matter. Not only should physicians and other health care leaders receive coaching services—they should also be coach-like in their own leadership role—a perspective that is gaining traction more broadly in the domain of leadership strategies (Bergquist, Sandstrom and Mura, 2024).

Transforming Drama Triangle to Empowerment Triangle

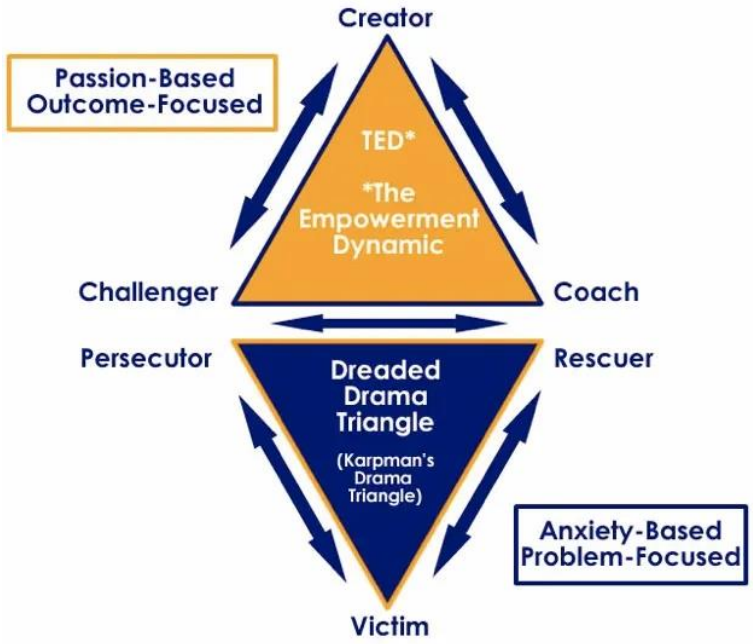
One of the great challenges of working in human systems, particularly complex adaptive human systems in the often dysfunctional ways we humans attempt to address conflict. We have already described the Drama Triangle, which was first described by Stephen Karpman in the 1960s (Karpman, 1968).

It is a model of dysfunctional social interactions and illustrates a power game that involves three roles: Victim, Rescuer, and Persecutor. Each role represents a common and ineffective response to conflict. We might call the Drama Triangle a Cognitive-Rut (what we earlier identified using the German term, *einstellung*). As we have noted, *einstellung* and cognitive ruts emerge when we are anxious.

The rut is a pattern of thoughts (and behavior) that we deploy to explain what is going on when things aren't going our way. This is a fundamental attribution error that is often found among individuals who are working under pressure. This rut-based error is also commonly found within the context of teamwork. Simply put, as we noted earlier in this chapter, when things don't go our way, most of us in groups first seek out someone else to blame. They are "our persecutor." We then turn to someone we hope will

save us from the bad place in which we find ourselves. We recruit the "rescuer" to save the day.

While such dramas sell well in the media and make for wonderful novels, most of us seldom benefit from their daily use in our home and work lives. You'll notice the lack of any sort of "coach" or "mentor" role in the Drama Triangle. It's a different matter when the Drama Triangle is transformed into The Empowerment Dynamic (TED) (Emerald and Zazonc, 2013):



Emerald's model describes clear role shifts for each player in the drama:

Victim →	Creator (Some also use Learner)
Villain/Persecutor →	Challenger
Hero/Rescuer →	Coach

Emerald (Emerald and Zazonc, 2013) also identifies specific ways to begin learning how to shift out of whatever role we find ourselves in under new conditions. We turn to Emerald for guidance, given our focus on increasing the use of coaching among healthcare leaders. Emerald recommends the following shifts from "telling to asking" to achieve this important transformation (adapted from Emerald and Zazonc):

	RESCUER	**COACH**
Thoughts	I must save others Pity for Victim	Creative people can save themselves I trust others and their abilities
Feelings	I fear not being needed I am superior to the Victim	Compassionate, fulfilled, and reflective Supportive yet "not-attached"
Behaviors	Jump in to save the day Foster dependency May sacrifice truth to protect others	Starts with questions, self-reflection Empowers and develops others Encourages with positive reinforcement (appreciative inquiry)

This shift from Rescuer to Coach role is one that likely requires some level of outside or internal coaching, as it requires internal work and reflection to understand the temptations and satisfaction gained through the rescuer role. We must let go of this

role to grasp the healthier and likely more successful role of leader-as-coach.

From a Salus-P3 viewpoint, we assume that healthcare would undergo a profound transformation into high-performance teamwork if every manager, supervisor, and leader in healthcare took steps to move from rescuer toward coach over the next decade. Such a shift would take enormous combinations of courage, curiosity, and resilience—for the world of health care is filled with anxiety-provoking conditions of volatility, uncertainty, complexity, ambiguity, turbulence, and contradiction (VUCA-Plus). We easily fall into a state of Serenity where either there is no need for a rescuer, or where those to be rescued do not dwell in our wonderland of Serenity. They either went down a different rabbit hole and live in a different constructed reality, or live in the real world and are too threatening to ever try to rescue.

Despite the many challenges of VUCA-Plus and the temptation to escape into a wonderland of Serenity, there are real opportunities available for reform and improvement with the engagement of a coach-based mode of leadership. A shift from rescuer to coach would likely enable healthcare leaders and managers to more effectively navigate the rising tide of VUCA-Plus realities. Coaching toward empowerment enables a healthcare leader to lead a more fulfilling life at work and to achieve better outcomes for all of us. There is a further upside to which we are about to turn. A coach-based role enables healthcare leaders to embrace and engage in a dynamic organizational phenomenon that we have identified as Emergence.

Leader as Coach II: Open to Emergence

A bit of background regarding the term, Emergence. It is used in many ways. It was originally employed by those engaged in process-oriented philosophy. It referred to the emergence of a new form that could not have been anticipated from the elements that went into the creation of this new form. The classic example

of emergence is the creation of water from two gases (oxygen and hydrogen). No one could have anticipated the presence of something so very different from a gas than an entity called water.

The term has also been used when describing the dynamics operating in complex systems. There often is a shift in levels of complexity as a system expands or matures. The emergence of a new level is often unpredictable. And the form it takes is also unpredictable (as in the emergence of water). The term has also been frequently used in recent years, particularly in the context of something called Big History (Christian, 2019). New forms in the universe, the creation of our planet, and the evolution of human civilization all take place through profound emergent transformations.

New Forms

In human systems, we find that new forms emerge from most revolutions—be they scientific or political. At a less dramatic level, we find emergence when a cluster of puzzles (complicated state) suddenly becomes tightly interwoven and interdependent (complex state). Together, these puzzles become an elusive and multi-tiered problem or even a "mess" that is made up of several intractable problems. We even see the emergence of several problems that require multiple (often competing) solutions. They become dilemmas and often form a condition of polarization.

The "complexity and adaptive leadership lens" offered by Lichtenstein, Uhl-Ben, and Marion (2006) may provide insights regarding leadership within the context of emergence. Insight might also be found regarding surprises inherent in the dynamics of complex adaptive systems, as are often found in healthcare. Lichtenstein, Uhl-Ben, and Marion reframe the traditional model of leadership. They shift their focus from an individualistic, charismatic leader who acts "on" an organization toward relational leadership that acts "in" the organization. This form of leadership is distributed throughout the organization. This

distributed leadership stimulates purposeful tension to create adaptive outcomes and changes in the organization.

The shift of focus from individual leadership (traditional) toward distributed leadership (newly emerging) requires a new lens. It is a lens that yields important insights regarding complex interactions in an organization. These are interactions that generate novel and innovative ideas and behaviors that might not otherwise surface. The authors point out that leadership itself is an emergent event.

Outcomes emerge from the relational interactions among agents in the organization. They don't emerge just from a single person at the top of an organizational hierarchy. The capacity of leadership in an organization to create just the right relational tension and harness a series of positive emergent changes is critical. The successful engagement of this relational lens of leadership will eventually lead to a new and more adaptive organization. The organization will be able to navigate whatever VUCA-Plus external and internal realities emerge.

Surprise

Emergence might also require a lens (and heart) that is open to Surprise. A colleague of ours had the unique opportunity to attend a session led by Michael Polanyi, the Nobel-winning biologist, who was speaking of the false divide between the humanities and science. Polanyi mentioned that all significant learning is attended by surprise. We are surprised when water emerges from the combination of two parts of hydrogen to one part of oxygen. Those hanging around during the early years in the formation of our planet would have been surprised to find that a bunch of chemicals and some light produced a living being. (Of course, we would have been surprised to find someone hanging out in this hostile environment in which there were not yet any sentient beings.)

One of the attendees at Polanyi's seminar spoke up after Polanyi was describing how scientists are surprised by major new findings in their field. The attendee indicated that this sense of surprise and even awe seemed like the Hebrew experience of encountering Yahweh. Polanyi was surprised. He had never thought of this comparison. Though he grew up in a Jewish culture (and had to escape Hungary in part because of this heritage), Polanyi had abandoned this heritage many years before leading this seminar. Suddenly, Yahweh reappears and offers new insight about surprise and emergence (in this case, the new insight-generating merger of Polanyi's scientific background with his Jewish background).

Dither

There is another important characteristic of emergence that is often not considered, though dithering has been identified several times in this book. An insight into this characteristic comes from another seminar that was led by a noted scientist. In this instance, it was Karl Pribram, a major neuroscience researcher and theoretician from Stanford University (who we have already turned to regarding his work on T.O.T.E. with Miller and Galanter). Pribram was speaking about the way our nervous system operates like a holograph (Hampden-Turner, 1981, pp. 94-97). As a side note, Pribram talked about something he called a "dither." This is the vibration that tends to occur in an individual neural cell before it fires. Pribram suggested that this same "dither" effect might operate in any system just before it undertakes a major shift in state (its own "firing").

Pribram's speculation might readily be applied to the dynamics operating in any emergence. We might expect to see some "dithering" just before the new emergent form is "born." There would be the "birth pains" represented in the vacillation of the pre-emergent forms. Properties would change rapidly in character and form. State of affairs would swing back and forth—

from hot to cold, belligerent to peaceful, orderly to chaotic. Entities would move rapidly from side to side.

We would witness the reign of Volatility--the first (V) condition of VUCA-Plus. Under such conditions, we must be nimble of cognitive foot. We must find an adjustable lens. This lens must be altered in scope and focus based on rapidly changing conditions. Or we might have to be patient and wait for the new form to emerge and then assist with the raising of this new child—our lens becomes one of nurturance and care (Bergquist and Quehl, 2019a).

Learning

Emergence can also be viewed from the perspective of new forms of learning. We must be open to accommodation-based learning when new elements are added to an existing condition. We can't simply fit (assimilate) the new elements into our existing framework. We return to Michael Polanyi, who proposed that all significant learning requires the integration of something new with an existing body of knowledge. The form in which this new learning takes place can never be fully specified. For this form itself would be new and would have to be integrated with what already exists, thus necessitating yet another level of learning and integration.

Unfortunately, most of the work on emergence and learning concerns the introduction of new learning in an established setting rather than the learning that must occur when the setting itself is emergent. New settings of an entirely different form and operating in an entirely different way produce a new set of challenges. Imagine navigating a warped plane where each valley is completely different from the other valleys on the plane. We are continually strangers in a strange new land.

In turning to the insights offered by Polanyi, we would have to push back on those who advocate emergent learning. We would suggest that the "rules" and "procedures" of emergent learning will need to be integrated with the content of what is being

generated via this process. This new integration of process and content requires a higher level of learning—and the potential of an emergence in the setting. It might even be that "real" learning occurs when the emergent learning process is being fumbled or when participants rebel against this process. The setting is filled with surprise and a whole lot of dithering. Eventually, a new form and new insights may emerge.

Reflective Inquiry

The central question at this point becomes: how do we learn in the midst of surprise, dithering, and new forms? Polanyi would suggest that there is no easy answer—for any answer we might offer would have to be newly integrated with the challenging, emergent setting we now face or even live in. Keeping Polanyi's cautionary note in mind, we can suggest that there are processes of reflective inquiry that can be thoughtfully engaged when confronting (and seeking to lead) in an emergent setting.

First introduced by Donald Schön in *The Reflective Practitioner* (Schön, 1983), reflective inquiry concerns the ability to consider actions to be taken based on critical consideration of one's own attitudes, perspectives, and existing practice. Along with this self-critical practice comes flexibility (agility) and continuous adaptation to the changing conditions that come with VUCA-Plus—and emergence. It is not enough to learn from one's experiences; one must also learn about the very process of learning from one's experiences.

In other words, experience alone does not necessarily lead to learning; deliberate reflection on experience is essential. Together with his colleague, Chris Argyris, Schön would differentiate between learning from a specific experience (the aforementioned "single-loop learning") and learning that takes place regarding the learning from multiple experiences ("double-loop learning') (Argyris and Schön, 1974; Argyris, 2001). Effective reflective inquiry is based on this second-order (double-loop) learning.

Fundamentally, this process of reflective inquiry is about the integration of theory and practice. Schön was always critical of the split between the education of theatricians and practitioners. He pointed to the isolation of practitioners from those engaged in scientific studies regarding the issues that the practitioners were facing. We are reminded of isolating conditions existing in a healthcare system where one of us was serving as a consultant. While this system played a central role in the study of AIDS during the early 1990s, those who were actually working with patients suffering from AIDS were rarely consulted by the AIDS researchers regarding what was really going on concerning not only the disease but also the thoughts and behaviors of the AIDS patients.

Schön would suggest that researchers need to pay closer attention to what is actually occurring the world of clinical practice. He would also insist that a successful practitioner should also be a thoughtful scientist. They should test their perspectives and assumptions against the reality they face in their daily work. Schön identifies this everyday process as reflection-on-action and reflection-in-action. The reflective practitioner is responding to problems, messes, dilemmas and polarities – not just single-dimension puzzles. Building on insights offered by John Dewey, Schön was not only unafraid of venturing into the world of complexity and emergence, Schön also believed that valid and useful knowledge is only gained from this "dirty" involvement in real life issues.

Leader as Coach III: Open to Critical Reflection

Given this push toward active engagement in and reflection on real-life issues, what type of critical questions might be asked? In what domains should the Leader-as-Coach venture when engaged in reflective practice? Where should the inquiry be directed when a coach/leader is reflecting alone or in a team

setting? In seeking second-order answers to these questions about questioning, we can be guided by the experiential learning cycle proposed by David Kolb (Kolb, 1984).

Inquiry Series One (Divergence: Taking in Immediate Experience)

Description: What happened? What would a "neutral" observer have seen and what fundamental observations would they have made?

Feelings and State of Mind: "What were your reactions and feelings? What made you most happy, anxious, mad or confused?

Reflections: What biases might you have brought to this experience? What were you expecting and where were you surprised?

Inquiry Series Two (Assimilation: Making Sense of Immediate Experience)

Evaluation: What was good or bad about the experience with regard to your own welfare? What about the welfare of other people? What about sort term consequences? What about long-term consequences? How might your own opinions of good and bad influence the judgments you have made?

Analysis: What sense can you make of the situation? What was really going on? What do you think were the causes and barriers (If any)?

Reflections: How is this similar to and different from other experiences of a similar nature? Were different people's experiences similar or different in important ways from your own?"

Inquiry Series Three (Convergence: Learning from Experience)

Conclusions: What can be concluded, in a general sense, from these experiences and the analyses you have undertaken? What

can be concluded about your own specific, unique, personal situation or way of working?

Reflections: What alternative conclusions might be reached if a different perspective is taken on what occurred? Is there "another side to the story"?

Inquiry Series Four (Accommodation: Taking Action Based on Analysis of Experience)

Personal action plans: What are you going to do differently in this type of situation next time?

Single-Loop Learning: What steps are you going to take based on what you have learnt?

Double-Loop Learning: What have you learned in this situation that you can take to other situations? What did you learn about yourself as a learner?

Multiple Lens: There is a second approach that can be taken when engaging in reflective inquiry—especially when confronting the surprise of a newly emergent phenomenon. This approach involves a "whole body" response to the challenges inherent in the emergence of a new form.

Leader as Coach IV: Open to New Perspectives (Multiple Lenses)

Stephen Brookfield (1998) proposed that critically reflective practitioners constantly research their assumptions by seeing practice through four complementary lenses. Each of these lenses moves us further away from our own personal (proximal) perspectives and practices to more distant (distal) perspectives and practices.

We would suggest that we need all four of these lenses to complement the lenses we have already identified: (1) the lens of

complexity, (2) the lens of surprise, and (3) the adjustable lens. Here are the new lenses:

Lens 1: Our autobiographical eyes

Our autobiography is an important source of insight into practice. As we talk to each other about critical events in our practice, we start to realize that individual crises are usually collectively experienced problems, messes, dilemmas, and polarities. Analyzing our autobiographies allows us to draw insight and meanings for practice on a deep, holistic (cognitive and emotional) level.

Lens 2: Our eyes as learners.

Learning about ourselves as leaders (double loop learning) and even learning about how the setting in which we operate influences how we learn (triple loop learning). We compare ourselves to other learners (and the differing ways in which they engage Kolb's experiential cycle). We are open to testing our own assumptions as a learner and the assumptions and biases we bring to the learning process.

Lens 3: Our colleagues' eyes.

As we mature, there is an important development step that takes place. It is called "a theory of mind" and involves our capacity (and willingness) to acknowledge that other people may see the world in a quite different manner from how we see it. Our primary narcissism breaks down. We acknowledge a world that exists outside our own cognition (and affect).

Respected colleagues can serve as critical mirrors reflecting to us images of our actions. Talking to colleagues about problems and gaining their perspective increases our chance of finding some information that can help our situation—especially if the perspectives they offer differ from our own (Miller and Page,

2007; Weitz and Bergquist, 2024). Cross-cultural dialogue is especially helpful in bringing about successful reflective inquiry.

Lens 4: Our theoretical and conceptual eyes

Theory is especially important in the engagement of assimilation (Kolb's second series). We can learn (vicariously) from the experiences of other people (case studies) as well as from the numbers and diverse insights offered in books. As Frederick Hudson (1999) notes in describing the process of making major life changes, it is important that we can "name" what is happening to us and to our perspectives and practices. Theories help us focus on what is important (challenging in a world of volatility, complexity, and ambiguity). Theoretical structures and guidelines can also help us address the contradictions we find in our analysis of issues we are facing.

Lens 5: Collective eyes

In moving beyond Brookfield and addressing the unique challenges associated with Emergence, we turn to the notion of collective learning and to the role of collective eyes in discerning the elusive "truth" to be found in the swirling VUCA-Plus environment. As Ken and Mary Gergen (Gergen and Gergen, 2004) proclaimed, "truth is only found within community." More specifically, they would suggest that truth is found in trusting relationships: "constructivism favors a replacement of the individual as the source of meaning with the relationship."

Even more to the point, truth is found in dialogue – and disagreement. There is an insistence that we respect and learn from other people: "one is invited into a posture of curiosity and respect for others." Of greatest importance is the respect we show for the distinctive perspectives and practices which people from all backgrounds bring to the dynamic construction of a desirable future.

A constructivist framework enhances the possibility that old, outmoded assumptions will be challenged, and new realities and values will emerge. Diversity thrives with the encouragement of collaboration and the absence of rigid judgments ("the one right way.") Participants in constructive dialogues are not confined to traditional sources of expertise and authority because the relationship and the discourse are themselves reality and the primary source of profound insights.

Organizational Learning and Collective Intelligence

We can take this fifth eye a step further. There are distinctive (often cutting-edge) lessons to be learned and insights to be offered by individuals who are collaborating. This is Ken and Mary Gergen's dialogue toward truth. In addition, there is the occasional breakthrough learning and the insights gained by a team or task force in the organization. We find the acceptance and use of collective advice that is "out-of-the-box."

However, existing alongside this learning and these insights is the intensive resistance to new learning. We find repetitions of old, outmoded behaviors. Nothing has been learned from history. Invalid assumptions are being made and reinforced by those in power. Most importantly, self-fulfilling beliefs are rampant. Emerald's triangle of drama is in full operation. We identify an "enemy," treat them as an enemy, and soon find that they are defending themselves against our threatened attack. They become our enemy precisely because we treat them as an enemy. Nothing is learned. Everything invalid is validated. The organization is "stupid," as are its leaders.

Single and Double Loop Learning

How do we make sense of the challenging contradictions between organizational learning and organizational resistance? Especially when these two conditions can exist within the same organization

(which is often the case in health care systems). We look once again to some of the wisdom and guidance offered by Chris Argyris and Don Schön as they address the issue of organizational learning. These two highly collaborative colleagues from Harvard (Argyris) and MIT (Schön) offered an important perspective concerning a concept we have already offered in this book, regarding single-loop and double-loop learning.

Chris Argyris (2001) offers the following important distinction:

> . . . learning occurs in two forms: single-loop and double-loop. Single-loop learning asks a one-dimensional question to elicit a one-dimensional answer. My favorite example is a thermostat, which measures ambient temperature against a standard setting and turns the heat source on or off accordingly. The whole transaction is binary.
>
> Double-loop learning takes an additional step or, more often than not, several additional steps. It turns the question back on the questioner. It asks what the media call follow-ups. In the case of the thermostat, for instance, double-loop learning would wonder whether the current setting was actually the most effective temperature at which to keep the room and, if so, whether the present heat source was the most effective means of achieving it. A double-loop process might also ask why the current setting was chosen in the first place. In other words, double-loop learning asks questions not only about objective facts but also about the reasons and motives behind those facts.

The challenge is that users of information want the message they receive to be single-loop in nature. They want SC²-Plus. Conditions of simplicity, clarity, calm, and consistency are sought to replace VUCA-Plus (and the requirement of double-loop learning). The users of information also want their leader or an

expert to tell them that they need to do more or do less of what they are already doing, rather than something new and different. Unfortunately, a large portion of truly valid and useful advice coming from healthcare leaders requires that the recipient of this advice do something different (double loop) rather than do more of the same (single loop).

As Argyris and Schön (1974, 1978) have repeatedly shown, this type of learning is difficult to achieve and is often associated with equally-as-challenging double loop change. The second level of learning and change often requires broad-based support from those leading and working in the organization. This collective support is based on a dynamic associated with organizational character and culture. A Learning Organization must be created and sustained.

The Learning Organization

As the name implies, an emphasis is placed in this organization on collective learning. Mistakes will inevitably occur in a VUCA-Plus world. We can't avoid making mistakes. The key goal in a learning organization is not to make the same mistake a second or third time. We might not be able to live without mistakes, especially if our organization is seeking to be agile and creative. However, we can learn from our mistakes. If there is no learning from mistakes, then a "stupid" organization has been created. Mistakes are repeated. Nothing is learned from history.

We wish to move beyond Argyris and Schön at this point by taking a more appreciative perspective. In a learning organization, we can learn not just from our mistakes but also from our successes. It is not enough to celebrate when we happen to get it right in spite of uncertainty. In addition to celebration, we must reflect on what has occurred that produced successful outcomes. In other words, we should "catch them [us] when they [we] are doing it right!"

Working in a challenging health care system, we must spend time reflecting on what has occurred and what we did that influenced the desirable outcomes. We need to slow down our thinking (Kahneman, 2011) and engage in double-loop learning if we are to learn from both our failures and successes. Those with expertise in appreciative inquiry can be very helpful in this regard (Srivastava, Cooperrider and Associates, 1990; Bergquist, 2003; Cooperrider and Whitney, 2005).

We wish to extend and expand our exploration of the fifth eye even further. A successful engagement of the fifth eye and an accompanying engagement of organizational learning requires that we gain a fuller understanding (and appreciation) of an organizational dynamic called "collective intelligence." We must be smart not just as lone healthcare practitioners but also as members of a team—guided by those who are coach-like in their leadership and appreciative in their encouragement of and support for shared ideas and insights.

Collective Intelligence

Important collective dynamics are associated with the shared framing and reinforcement of distorted insights and false learning that pervade many health care organizations – especially those faced with the anxiety-provoking challenges of VUCA-Plus. Single loop learning or resistance to all learning is prevalent when we are anxious, overwhelmed or simply exhausted. By contrast, there are collective dynamics that operate when an organizational culture of learning has been established. These dynamics are to be found in a learning organization even when VUCA-Plus anxiety is prevalent. All of this can be brought together in an analysis of what has come to be identified as *Collective Intelligence* (CI). For us, the critical question concerns the interplay between CI and the creation of a learning organization.

In recent years, the concept of collective intelligence has gained considerable traction. While much of the attention is directed

toward the way collective intelligence is enhanced through the use of Artificial Intelligence (AI) and specific digital applications, there is some attention being devoted to the psychological aspects of collective intelligence (Arima, 2021). There are even several research projects demonstrating that performance by a well-functioning team on a specific problem-solving task is often superior to the average performance of team members or even the most "intelligent" member of the team.

We know that for collective intelligence to be successfully engaged, the team members must be able to communicate effectively with one another. Information silos clearly hinder collective intelligence, while emotional intelligence enhances CI and team performance. Furthermore, a team must discover or create a sense of purpose. Team members must accept one another. There must be a shared perception that the team is a distinct entity. Team members share commitment, pride, clarity about roles and responsibilities, and a history of successful resilience (Hughes and Terrell, 2007).

Collective skills related to these ingredients include forming team identity, finding appropriate motivation, emotional awareness, interpersonal communication, tolerance of differing views, resolution of conflicts, and creation of a positive mood. Elsewhere, one of us has offered an appreciative perspective regarding these collective skills, suggesting that an *Empowerment Pyramid* must be created and maintained (Bergquist, 2003). Empowerment requires that a team move from effective communication to skillful conflict management, and then on to creative problem solving and appropriate decision making. Empowerment is an antidote to the close-minded state of Serenity. It is not an accident that our use of the term "empowerment" complements that offered earlier in this chapter by David Emerald.

Beyond the ingredients and skills needed for a team to become collectively intelligence is the creation of a supportive environment. Team members must forgo their competitive spirit

(at least with one another). A culture of individualism and individual gain must be discouraged. On the positive side is the critical role played by a culture of collaboration. Members of the team must be willing (even eager) to work with one another. They must find gratification in the relationships established with other team members. It also doesn't hurt if they enjoy the collegiality that comes with "winning" as a team rather than as an individual. Most importantly, as conveyed in the portrayal of the Empowerment Pyramid, team members must appreciate the strengths shown by one another as well as the moments when they are effective at communicating, managing conflict, solving problems, and making decisions. We once again introduce the appreciative motto: "Catch them [us] when they [we] are doing it right!"

Conclusions

What does emergence look like in a healthcare setting? When do several things that seem separate begin to dance to life and create new and surprising outcomes that might baffle and unnerve traditional healthcare leaders? COVID-19, of course, represents just such a surprise. We see viruses all the time, they are ubiquitous in our lives through colds, the flu, herpes, HIV, etc. We generally see contagious epidemics on the TV. They are happening in other countries. World-renowned experts are advising leaders of these countries on how to manage their epidemics.

We might get a little scared when one flies to our country like Ebola, yet most of the suffering and death happens "out there." We normalize the deaths of our endemic contagions: "Yep another flu season [yawn]". The emergence of COVID-19 is still hotly debated, was it a Chinese Death virus created in a lab and unleashed on the world to cripple the west? Or was it because of climate change and development into previous bat-lands leading

to unprecedented mixtures of species and natural mutations that formulated this devastating pandemic.

A pandemic is an emergent phenomenon that likely requires thousands of things to all fall in place in a certain way that, thankfully, doesn't happen all the time. Like a 100-year storm, some high-turnover, high-mutation-rate, moderate-killer virus is created and suddenly our entire world is shoved into a new and unstable, VUCA-Plus reality for everyone on the planet. Just looking at the DNA sequence of the virus, no one could predict how it would fundamentally alter reality for years, perhaps decades. This microscopic virus emerged and traditional healthcare, traditional public health, traditional life was not ready.

Nor were our leaders, surprised, baffled, we dithered and dithered. Yet we also acted with lightning speed to create the most effective, rapid vaccination development response to a pandemic virus in history. With emergence came polarity---mask vs no mask, social distance vs no social distance, conspiracy theories vs best evidence, truly effective treatments vs quackery. Entire societies dithered and squabbled about the right pathway forward.

Some societies, particularly Eastern societies, had clear, direct actions, often draconian and severe---that, at least based on publicly released data, provided the greatest protection for their population around deaths from COVID. Here in the United States, we came out worse than most other countries---with death rates far surpassing those in most European countries and much poorer countries without access to vaccines even. Yet healthcare leaders learned we can change our systems in the blink of an eye---something that seemed impossible pre-COVID-19.

Within weeks of the epidemic, new tele-health tools were fired up across the United States. We were able to provide healthcare access to millions of people from the comfort of their homes.

Home-based testing became normalized as the Federal government sent out free supplies of COVID-19 test-kits, often more accessible than they were in primary care offices event. People learned they can do their own home-based testing which now is rapidly growing in the United States with new "home test kits" spreading into women's health, trauma-informed care, men's health, longevity health, etc. We have seen an explosion of new telehealth opportunities, home-based test kits, and pro-active health websites emerging out of the storm.

Healthcare transformation was called for during many decades before COVID-19. Yet, in truth, the greatest disruptive innovation in modern healthcare history is COVID-19. This deadly teacher has taught us lessons we will continue to benefit from for decades into the future--at a great cost of so many lives. It is depressing to think of it. Dithering in the face of emergence is natural. Getting stuck at dithering, paralyzed by the polarity of opportunities, is a leadership failure. Taking stock of lessons learned requires self-reflection on the part of the leader-as-coach. This person, in association with colleagues, must access multiple lenses when viewing the events and outcomes that unfolded. Together with these colleagues, the coach-based leader will reflect on and learn from the experience through engagement of double-loop as well as single-loop processes.

We amplify our consideration of the reflective process by looking at Turbulence and Contradiction in Chapter Fourteen. These are forces that disrupt our leadership lives and how we might better adapt in the future. No greater challenge awaits the coach-based leader than addressing a complex problem, mess, or dilemma that is encountered in a turbulent environment and saturated with contradiction. So, stay tuned. . .

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Chapter Thirteen

Salus Perspectives, Policies and Practices

There is a growing body of Team Coaching literature that indicates this approach may take longer to establish, even though it has been shown to improve teamwork across a variety of professions, including healthcare. Leaders in healthcare have been calling for silo-busting, team-building transformations for decades, yet this state might not manifest fully until enough effective Health Team Coaches are developed.

Dysfunctional social interactions illustrate a power game that involves three roles: Victim, Rescuer, and Persecutor. Each role represents a common and ineffective response to conflict. We might call the Drama Triangle a cognitive rut, a pattern we humans use to explain when things aren't going our way. This is a fundamental attribution error that is common when engaged by individuals and when engaged by a team.

The capacity of leadership in an organization to create just the right relational tension and harness a series of positive emergent changes is critical.

All significant learning requires the integration of something new with an existing body of knowledge. The form in which this new learning takes place can never be fully specified, for this form itself would be new and would have to be integrated with what already exists, thus necessitating yet another level of learning and integration.

It is not enough to learn from one's experiences; one must also learn about the very process of learning from one's experiences, for experience alone does not necessarily lead to learning; deliberate reflection on experience is essential.

Truth is found in dialogue – and disagreement. There is an insistence that we respect and learn from other people: "one is

invited into a posture of curiosity and respect for others." Of greatest importance is the respect we show for the distinctive perspectives and practices which people from all backgrounds bring to the dynamic construction of a desirable future.

Existing alongside this learning and these insights is the intensive resistance to new learning. We find repetitions of old, outmoded behaviors. Nothing has been learned from history. Invalid assumptions are being made and reinforced by those in power. Most importantly, self-fulfilling beliefs are rampant. We identify an "enemy," treat them as an enemy, and soon find that they are defending themselves against our threatened attack. They become our enemy precisely because we treat them as an enemy. Nothing is learned. Everything that is invalid is validated. The organization is "stupid", as are its leaders.

The second level of learning and change often requires broad-based support from those leading and working in the organization. This collective support is based on a dynamic associated with organizational character and culture. A Learning Organization must be created and sustained. The key goal in a learning organization is to avoid making the same mistake a second or third time. We might not be able to live without mistakes, especially if our organization is seeking to be agile and creative. However, we can learn from our mistakes.

In a learning organization, we can learn not just from our mistakes but also from our successes. It is not enough to celebrate when we happen to get it right in spite of uncertainty. In addition to celebration, we must reflect on what has occurred that produced successful outcomes.

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Along with a potential loss of mission, contemporary organizations that exist in unstable environments are often vulnerable to a loss in any sense of commitment on the part of those working in the organization. The unclear boundaries, the shifting values of workers, and the newly emerging emphasis on knowledge as capital make it hard for organizations to elicit commitment from their employees.

Chapter Fourteen

Leadership in the Midst of Healthcare Complexity II: Balancing in Turbulence and Moving Across Multiple Cultures

> *The Learning Organization in contemporary vision has achieved a new kind of internal structure and process marked by imaginative flexibility of style in its leadership and by empowered contributions from its membership. It is constituted to learn and grow and change -as opposed to traditional bureaucratic models constituted to be stable and predictable in their operation, to hold the line and not to change. Peter Vaill (1996)*

In this final chapter, we turn to the fundamental nature of the challenges that a coaching and team-oriented health care leader is likely to face in the middle of the 21st Century. While there are many challenges (such as those related to volatility, uncertainty, complexity, and ambiguity: the so-called VUCA conditions), we focus on two additional challenges that are closely related to and exacerbate the intensity of the VUCA conditions.

These two additional challenges are turbulence and contradiction (yielding a VUCA-Plus environment). Leadership in a VUCA-Plus environment requires balance and agility in a world that is turbulent and contradictory, in part, because of the varying conditions of change in contemporary health care and because of the presence of six subcultures in health care that each contains its own version of reality and its own set of needs.

Turbulence in Healthcare

Peter Vaill (2008), the organizational theorist who first introduced the idea of a "white water" world, wrote about the need for balance in navigating this world. This is a matter not only of finding balance in the moment-to-moment shifts in the dynamics of the system one is navigating (the volatility in VUCA-Plus), but also of preparing for the radically different patterns of change (or non-change) that is operating in the white-water system. (uncertainty and contradiction in VUCA-Plus).

Many of today's health care organizations must survive highly turbulent and unstable conditions. The white water is all around us at this point in the 21st Century. Some things in our life and work are moving rapidly, while other things are moving in a cyclical manner. We are also likely to find that some things are not moving at all—even if we would like them to move. Perhaps, most importantly, some things in our life and work are moving in a chaotic manner—they are swirling about in an absolutely unpredictable manner. We might be able to adjust temporarily to one of these four conditions. However, we soon find that we are facing a different set of conditions that require a quite different manner of planning and leadership.

Before identifying the nature and challenges associated with each of these four subsystems, we offer the positive side: there is nothing more beautiful and variable than a mountain stream, with its falls, whirlpools, rivulets, and quiet pools of water. The stream is beautiful in part because it is always changing. Like the flickering flames in a fireplace, the crash of waves on an ocean beach, or the fall of snow on a winter evening, there is always something new (emergent) evolving from the unpredictable interplay of various subsystems in the mountain stream.

The whole is always something more than the sum of its parts. If one looks more closely at this extraordinarily complex system,

one finds the four subsystems operating in the stream. These four subsystems interact to produce increased complexity. And they, in turn, produce a phase change (tipping point) which becomes the magical white-water world of the flowing stream (the positive side), as well as the VUCA-Plus challenges of unpredictability and contradiction (the negative side).

What is the negative (or at least challenging) systemic Impact? Four subsystems are all operating at the same time—and they are often bumping into one another. There is another important factor that we must add to this complex equation. We know that any system will grow chaotic when it moves faster. Thus, in a world where accelerating change (the first subsystem) is becoming more prevalent, we are likely to find that chaos (the fourth subsystem) will also become more prevalent. The cyclical changes—that are more predictable—will become less prevalent.

These four different environments require quite different approaches to leadership.

Rapidly Changing Environment

There is a rapidly flowing subsystem of the stream. The movement in this subsystem is very rapid and highly predictable. When we watch a leaf being carried by this subsystem, we can readily tell where it will be two seconds from now. The flow of water in this subsystem resembles the flow in a large river: powerful, constant, and quiet. This subsystem of the stream exemplifies the orderly subsystems in an organization.

While rapid change has long been identified as the major challenge facing our organizations and societies – beginning with Alvin Toffler's *Future Shock* and *The Third Wave* (Toffler, 1984)—it is actually not the most challenging subsystem in our white-water world. In fact, we can get addicted to this rapid change. There is an adrenaline rush when we turn knobs and change policies in the face of a rapidly shifting external environment. In this state of addiction, we can even envision change when it is not actually

present. Or it is a change that is predictable because of seasonal shifts or recurrent patterns in our society. These changes fit with our third subsystem.

Cyclical Environment

A second kind of subsystem of the stream is also orderly, though it is much more complex. This is the whirlpool that is formed when the water hits an impediment (such as a submerged rock). The water in a whirlpool keeps changing directions; however, one can predict the change in directions since the water is moving in a predictable spiral formation. We know where the leaf that enters a whirlpool will be two seconds from now. However, we may not be able to predict where it will be in five seconds, since the whirlpool is likely to pull the leaf down below the surface of the water and throw it off into some other subsystem.

In an organization, this whirlpool-type subsystem is represented by the predictable changes in the life cycle and seasons of the organization. Change is occurring in the organization, but it is change that has occurred before in the organization (seasonal change). Or it is a change that one can anticipate given the experiences of comparable organizations as they grow larger or older (lifecycle change). There are unknown aspects of the change, as the organization (like the leaf) is pulled into the vortex of the compelling change. Even if they don't know where it will all end after the predictable cycle, seasoned leaders can be relatively confident regarding the pattern of organizational change that will unfold in the cycle. Budget preparation times in companies are typically whirlpool-type occasions: intense, dizzying, but ultimately predictable.

Stable Environment

A third environment stands in stark contrast to the first two. This environment often takes the form of a quiet pool located near the shoreline. This pool often contains water that is stagnant and

undrinkable. White water streams usually include this subsystem. The quiet pool is tucked away behind a large boulder in the stream or at the edge of the stream beside a large sunken tree trunk. It is remarkable that a stream with rapidly flowing water also inevitably contains many subsystems that are not only very quiet but also often stagnant. We can usually drink from the rapidly flowing water in a stream--but are warned (by the smell) to avoid drinking from the stagnant pools.

Yet these pools are often the sources of nutrients for the ecosystem of the stream. Our leaf floats into the stagnant pool and remains there. It eventually sinks and joins with other rotting leaves to form a richly nutritious biomass for the living organisms of the stream. The quiet pools represent yet another form of order in the turbulent stream. Nothing changes. Everything eventually sinks, rots and contributes to the ongoing revitalization of the bio-system.

The quiet pool is represented in the organization by those subsystems that never change or change very slowly. These are the subsystems that provide what Talcott Parsons (1955) calls the latent pattern maintenance functions of the organization. They preserve the continuity of the organization, while other subsystems are changing rapidly. These subsystems include the rituals, ceremonies, norms, values, and narratives of the organization. These are the deeply embedded and often invisible (latent) patterns of behavior in the organization.

The quiet pool is also represented in the formal bureaucratic processes of the organization: those rules and regulations that are slow to change and that seem to have a life of their own. They are reinforced even when no longer appropriate and are followed even when no longer formally in force. These are the bureaucratic ways represented in the phrase, "that's the way we have always done it around here." We might also include those people and departments who represent the old ways of doing things in the

organization. Sometimes called the "remnant," Everett Rodgers (1995) identifies these people as the "laggards" of an organization who forever struggle against change and innovation.

This quiet pool may at first seem to represent a deficit in an organization and a source of resistance and consternation for those seeking to improve and adjust their organization for a changing world. We must recognize, however, that a quiet pool is the primary source of nutrition for the stream. Comparably, the quiet pool in an organization is the primary source of its distinctive character, traditions, and culture.

Without this core patterning, the organization will fall apart. It will lose its integrative glue and its sense of abiding values and purposes. In the VUCA-Plus world of health care, where boundaries are often falling away, the quiet pool in an organization contributes in a profound way to its clarity regarding organizational intentions and to its sense of continuity and commitment. Alternatively, these organizations may operate in heavily regulated settings. Many modern health care systems are increasingly fitting into this category,

This environment that we have identified as stable tends to decline in size or magnitude as the stream is increasingly dominated by the other three subsystems. Or it will become isolated from the other subsystem. While reduction in the size of this subsystem might initially seem to be a positive outcome, we find that this is not always the case. The third subsystem is often a source of stability for any system (especially a human system)—providing Parsons' latent pattern maintenance.

Furthermore, nutrients in a natural system (such as a mountain stream) reside primarily in the so-called "stagnant" portion of the stream. This is where leaves eventually end up and where they sink to rot (convert into new forms of nutrition for other living beings in this stream). We might find that this same nutritional

function is being served in human health care systems. But simply, this third subsystem is just as important as the other three. Overly rapid change damages everything in a system and makes this system hard to manage. We need some form of a stable environment in our life and work.

Chaotic Environment

There is finally a fourth type of subsystem in the stream. This is the subsystem that resides on the boundaries between the three other subsystems. When looking at a stream, one sees this type of subsystem in the area that exists between the rapidly flowing section of the stream (subsystem one) and the stagnant pool (subsystem three) or between the whirlpool (subsystem two) and either the rapidly flowing or stagnant water. Unpredictability is endemic to this fourth type of subsystem.

A leaf that floats into this subsystem begins to move in a highly erratic manner. One cannot predict from moment to moment where the leaf will be. It bobs and weaves, darting from one point to another in a seemingly random manner. Eventually, the leaf will end up in the stagnant pool, the whirlpool, or the fast lane (subsystem one). Meanwhile (to borrow from the movie *All About Eve*), it is in for "a bumpy ride!"

The fourth subsystem is common in contemporary health care organizations that are filled with uncertainty resulting from the complex and unpredictable dynamics inherent in this subsystem. Typically, the participants in these turbulences not only have differing priorities; they also move at different paces from each other and in different directions. This is at the heart of the complex conditions in which many contemporary healthcare leaders find their life inside an organization.

Living and Working in a White-Water Environment

Given these characteristics of a "white water" world, we find that the personal impact is likely to be great for any of us who are

living and working in this environment. The white-water environment requires a search for balance and direction which in turn requires ongoing attention.

Apparently, we need a kayak when navigating the white water. A canoe will just tip over, for it doesn't' have the flexibility of a kayak. Furthermore, we must find our center of balance when steering our kayak through the whitewater. Peter Vaill (2008) goes so far as to suggest that this center of gravity is often found in our embracing of a core set of principles and values—even operating from a spiritual perspective on life and work.

One might wonder if this core can't be found in basic religious beliefs and in an alliance with some authoritarian figure. Don't we find balance when we find guidance in a set of firm religious tenets? We would suggest that this is rarely the case, because these beliefs, alliances, and tenets are much too rigid. They operate like canoes that can only move in one direction (forward). Furthermore, the person operating the canoe has a one-bladed paddle that must be moved from one side of the canoe to the other side.

Counterbalancing and adjusting to changes in the direction of the water is difficult, as is also the case in a white-water organization or society. By contrast, the person navigating the kayak is provided with a two-bladed paddle that makes counterbalancing and shifting directions much easier. The term agility can readily be applied to the successful operations of a kayak—and to the successful leadership of a mid-21st Century organization. This term does not readily apply to someone or some organization that is caught up in the vice-grips of authoritarian rule.

Leadership in Turbulent Environments

Many mid-21st Century health care organizations do not, at least on the surface, appear to be as fortunate as the more stable organizations. They exist in an environment that is unstable and

highly turbulent, hovering on the brink of both order and chaos. VUCA-Plus is swirling all around the operations of these organizations.

Along with a potential loss of mission, contemporary organizations that exist in unstable environments are often vulnerable to a loss in any sense of commitment on the part of those working in the organization. The unclear boundaries, the shifting values of workers and the newly emerging emphasis on knowledge as capital make it hard for organizations to elicit commitment from their employees.

We are likely to find that mid-21st-century health care organizations are becoming less top heavy or that communication across the existing hierarchy is becoming more important and, as a result, the focus of considerable training and review. The knowledge worker who resides at the "middle" level of most organizations will have much to say in the future about the success of their organization if it is operating in a turbulent environment.

Contradiction in Healthcare

Leadership in contemporary health care systems is challenged not only by the turbulence caused by the confluence of multiple environments, but also by the contradictory forces that operate within these systems. Specifically, these contradictions reside within the multiple subcultures that operate in these systems.

For instance, it is interesting and informative to note that half of the documents cited in the Scoping Review of complex leadership came from Nursing publications. This is quite understandable since nurses stand at the crossroads between two dominant cultures in contemporary healthcare—the professional culture and the managerial culture (Bergquist, Guest and Rooney, 2003).

Along with the Alternative Culture and Advocacy Culture in health care, these two organizational cultures play a major role in

determining how complexities (and other VUCA-Plus conditions) are interpreted and made meaningful (social complexity perspectives), while offering contradictory ideas, and while instituting polices and actions that make the system that much more complex (mathematical complexity perspective).

Leadership and Cultural Agility

Together with turbulence, contradiction rages uncontrolled and often uncontrollable when these six cultures are fully in operation. While we will be devoting an entire book in this series to these six cultures, we provide a brief review of the way in which anxiety builds organizational culture and the way in which each of these cultures operates. This brief review provides a glimpse into how health care leadership is being challenged by the diverse perspectives and operations that attend each of these cultures.

Culture and Anxiety: Culture provides a container. It establishes roles, rules, attitudes, behaviors, and practices. In terms of illness, it describes ways for people to begin feeling safer after they have experienced themselves as vulnerable, unsure, or threatened. Many people, for instance, feel comforted when they place themselves in the hands of a physician. The patient can depend on the physician's allegiance to the Hippocratic oath and the pledge to do no harm. Culture places boundaries around the illness experience. It provides predictability.

Culture says that when you take on the sick role you are not alone. There are specific people to see. There are tests to be performed. There is assurance that you are a long way from dying. Culture provides meaning. In some parts of the world illness and injury are expected to be an opportunity for transcendence and personal growth. In North America and many other technologically dominated societies, it is something to be endured and gotten past as soon as possible. We know that illness or injury will soon pass or heal, because we have faith in medical technology. In all these ways, culture helps to manage anxiety.

Psychologists tell us that when we become anxious, we tend to regress to a more primitive state of mind and feeling. We become more like we were as children. In particular, we are likely to become dependent and look forward to being taken care of by a person who, in certain respects, is superior to us. This anxiety and resulting dependency often serve us well. Our anxiety encourages us to seek help. It provides an incentive for us to turn to other people, to rely on their expertise or at least their caring attitude, and to recognize our own need for change.

Yet anxiety is also a source of major problems regarding health care. Anxiety not only keeps people from addressing major health-related problems in their lives; this emotional state also contributes to the wounding of healers and blocks the fundamental changes required in our contemporary health care delivery systems. As we come to understand the nature and effect of anxiety in health care, we will begin to unravel many of the Gordian knots associated with our current health care crisis.

The Containment of Health Care Anxiety: We base our analysis of health care cultures on this fundamental interplay between the experience of pain, the containment of anxiety, and the formation of organizational cultures. This interplay was carefully and persuasively documented more than forty years ago by Isabel Menzies-Lyth (1988). She wrote about ways in which nurses in an English hospital cope with the pain and anxiety that are inevitably associated with issues of health, illness, and injury—issues of life and death.

Menzies-Lyth noted how the hospital in which nurses worked helped to ameliorate pain and protect the nurses from anxiety. She suggested that a health care organization is primarily in the business of reducing pain and the attendant anxiety. On a daily basis, all other functions of the organization are secondary to this pain and anxiety-reduction function.

It is specifically the culture of the organization that serves as the primary vehicle for addressing the nurses' anxiety and stress associated with ameliorating the pain. The culture of an organization is highly resistant to change precisely because it directly threatens the informal system that has been established in the organization to help those working in it to confront the anxiety and make sense of the pain inherent in healthcare.

Menzies-Lyth's observations have been reaffirmed in many other organizational settings. Anxiety and pain are found in most contemporary organizations. And efforts to reduce this pain and anxiety are of prominent importance. Hospitals and other health care systems, however, may be particularly saturated with pain and anxiety, given the unique problems they confront. It was not coincidental that Izabel Menzies Lyth, in studying healthcare institutions, was among the first to identify pain and anxiety as central issues in organizational life.

Somehow, a hospital, or any other institution that must address the issues of pain and that is inclined to evoke anxiety among its employees and customers, must discover or construct a culture that creates a context for the pain and contains the anxiety. At the same time, this institution must address the realistic, daily needs of both its employees and customers. How exactly do pain and anxiety get addressed in organizations?

Menzies Lyth suggested that pain and anxiety are addressed through the social defense system, which is a pattern of interpersonal and group relationships that operate in the organization. Other organizational theorists and researchers similarly suggest that the rituals, routines, stories, and norms (implicit values) of the organization help members of the organization manage pain and anxiety inside the organization.

Yet these rituals, routines, stories, and norms are not a random assortment of activities. Rather, they cluster together and form a single, coherent dimension of the organization. This single,

coherent dimension is known as the *culture* (small "c") of the organization.

Isabel Menzies-Lyth proposed that healthcare workers create a specific culture in their healthcare institution to contain this institution's anxiety. These institutions are to be neutral containers with the ability to absorb anxiety. But what happens when the container is cracked or acts in ways that intensify pain and anxiety—as seems to be the case in contemporary health care? What happens when pain is introduced into this equation, as it must be when we are considering organizations that tend to people who are ill, injured, or even dying?

A tripartite dynamic is created. As pain increases, anxiety also increases for both the patient and those who are attending to the patient. Culture is then created to help reduce anxiety. This culture provides comfort or reassurance if it is successful. As Edgar Schein (1992) has noted, the culture of an organization is the residue of the organization's success in confronting varying conditions in the world. To the extent that a health care organization is adaptive in responding to and reducing pervasive anxiety associated with pain, then the existing culture of this organization will deepen and become increasingly resistant to challenge or change.

The pain also impacts the culture directly. While healthcare professionals are often reluctant to address the troubling issues associated with the meaning of pain, they must eventually confront these issues, even if this confrontation requires, as in the 1990s movie *The Doctor*, that they confront their own pain and mortality. At the same time, patients are trying to make sense of the pain and try to find meaning in the attendant suffering.

Together, the professionals and patients create additional cultural artifacts. These artifacts include stories, rituals, symbols, language, dress, and decoration of physical space, as well as the rights, privileges, and responsibilities associated with certain

culturally based roles in the organization. These artifacts give further meaning to the pain and suffering, and to the work of health care professionals. Artifacts often cluster and form powerful, coherent images. We call these images the *archetypes* of healthcare. These archetypes become particularly powerful and persuasive under conditions of anxiety and pain.

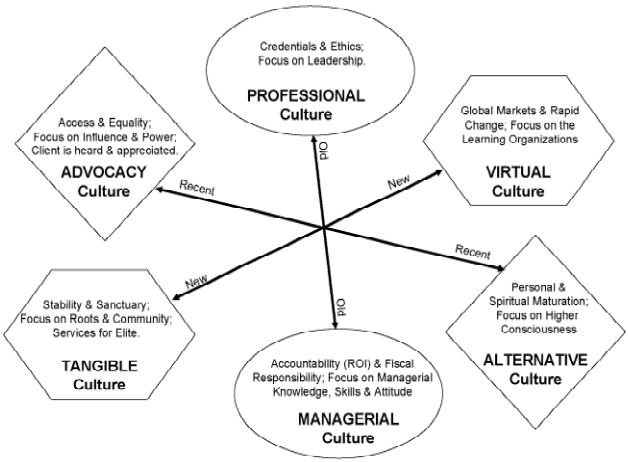
Organizational Anxiety and the Six Cultures of Health Care: A health care organization is primarily in the business of reducing pain and attendant anxiety. All other functions of the organization are secondary to this pain and anxiety-reduction function. It is specifically the culture of the organization that serves as the primary vehicle for addressing the nurses' anxiety and stress associated with ameliorating the pain.

Health care organizations are successful in part, and perhaps in large part, because they can reduce anxiety, or at least provide a context for understanding the meaning or purpose of the pain and anxiety that is experienced by patients, clients, citizens, and people working in healthcare.

The Six Cultures of Health Care

Organizations have created or embraced cultures that help them address the pain and anxiety that inevitably accompany the provision of health care. We identify six primary cultures that currently exist in North American health care systems, as well as many other health care systems in our world: (1) professional, (2 managerial, (3) advocacy, (4) alternative, (5) virtual and (6) tangible. These cultures influence the ways in which we interpret the nature and purpose of health care, as well as the ways in which we confront, reduce or find meaning and purpose in the pain and attendant anxiety associated with health care.

Graph Four: The Six Cultures



The Professional Culture

Medical, clinical, and scientific professionals populate this culture. Most of this culture's members hold death as the ultimate but inevitable foe. The scientific and medical professions gave over the task of understanding the meaning of life and death many years ago to religious and spiritual practitioners and the alternative culture, while they focused on the disease processes that happen to bodies.

They have been hugely successful in this endeavor. As a result of the efforts of healthcare professionals, countless people have been cured, had their lives extended, and had mobility stabilized, if not returned fully to them. Exciting new answers emerge from the problem-solving done by the professions that make up this culture. Practices improve. Harmful quackery is questioned and

eliminated. A host of competent people labor in richly textured jobs. Health care professionals are proud of the work they do.

In managing pain and anxiety, this culture has very much organized itself around the need to control, at all costs, the experience of death by deferring it as long as possible for themselves and their patients. Pain is to be tolerated. Death is to be resisted and overcome, no matter the cost. Professional practitioners have invented models and organizational structures and put systems in place that try to contain pain and defer death.

Nurses have played a particularly active role in establishing these structures. Pain is a valuable source of diagnostic information. Life is a by-product of the struggle against the death of the body. In this sense, the absence of pain and the continuation of life have no meaning for the professional medical practitioner other than as symbols or signs of success. Death calls into question the very nature of and meaning of life, which is the unexplored aspect of the professional culture's reality. As long as one is focused on the fight against death, then one never has to confront the purpose of this fight, which has something to do with the purpose of life.

We have effective systems and successful treatment programs because patients have always come first in the professional culture. People from the professional culture have theories about how to organize for maximum effectiveness that have to do with putting patient care first, which in turn ultimately has to do with the prevention or curtailment of death.

The patient comes first because it is through the patient that professional health care providers receive repeated reassurance and all kinds of support for the good job they do in thwarting death. This, paradoxically, becomes the central ingredient in the clinician's own sense of life purpose. Members of the professional culture look for strategies of organizational change that hold the promise of increasing their control over and opportunity to influence the quality of health care they provide. Ultimately, they

support organizational changes that enhance their ability to heal people and delay the inevitability of death.

The professional culture has been the dominant culture in healthcare since the early history of North American healthcare. It is now being attacked from all sides and must share power with the other three cultures of contemporary health care. The professional culture finds and takes its meaning primarily from the professional memberships and associations of its members.

Members of this culture value technical expertise and specialized technical language. They are fully committed to the preservation of professional autonomy and have established quasi-political governance processes to ensure this autonomy. These processes have enabled health care professionals, over the past hundred years, to strongly influence or even dictate the policies, procedures, and missions of the health care system. Members of this culture hold assumptions about the dominance of rationality and technically based procedures in hospitals and other health institutions.

Health care professionals have the rights and hold the responsibilities associated with physically touching people. This is not a trivial point, for these are among the only people in contemporary society, other than hairdressers, masseurs, and a few other members of the *touching professions*, who hold the power to physically touch another person with whom they are only professionally affiliated. The capacity to touch and comfort may be one of the most powerful and even magical ways in which people help one another in coping with the anxiety associated with physical and psychological pain.

Cure (amelioration) is highly valued in the professional culture. Prevention is also important. Any nurse or physician would prefer to prevent an illness or injury than treat it; however, professionals must often assign secondary status to prevention. These health care workers are often overwhelmed with the

demand for treatment and are usually paid primarily to cure rather than prevent. This emphasis on cure is intended in part to reduce the anxiety of both clinicians and patients. When the emphasis on cure is dominant, there is a tendency for members of health care systems to defer or deny issues associated with death and dying and to collude with patients in the avoidance of pain.

The professional culture also highly values competency. This emphasis helps to reduce the anxiety of both clinicians and patients. This emphasis, unfortunately, also tends to perpetuate the myth of medical infallibility and can block public access to the *secrets of the inner temple* of professional health care. Members of the professional culture value hierarchy and believe that a clear and stable hierarchy can effectively reduce the anxiety of both clinicians and patients.

This does not mean that the professional culture values bureaucracy, a hallmark of the second, managerial culture. Members of the professional culture instead value clarity regarding who is in charge in any given instance. Physicians, nurses, and a host of other players in a busy Emergency Room often deal with highly chaotic and emotionally charged situations. They value hierarchy from the perspective of identifying power and responsibility so that effective decision-making occurs. This emphasis on hierarchy can, in turn, lead to major status differences among health care professionals—and is a source of considerable wounding among many members of the health care community.

The Managerial Culture

This culture also brings much that is of value. It builds on the dichotomy between control and chaos. Members of this culture fear the loss of organizational control and are anxious about organizational chaos. They resolutely hold theories about how to organize for maximum effectiveness that have to do with predictability regarding the outcomes of any change effort. They

look for continuity and for planned change. Just as members of the professional culture live with the hope of thwarting the physical death of their patients, members of the managerial culture live with the hope of thwarting the death (chaos and unpredictability) of their organization. They look for organizational strategies that will reduce their anxiety regarding organizational chaos and delay the inevitability of organizational decline and death.

There is another important artifact of the managerial culture. People from this culture are not allowed to touch patients, but they are allowed and hold the rights and responsibilities to touch the organization and its resources, especially money. By touching and controlling the resources, health care managers believe that they can directly benefit their patients as well as society in general. Over the years, health care managers have primarily focused on the provision of resources for the amelioration rather than prevention of illness and injury. These managers have traditionally believed that they could reduce both their own anxiety and the anxiety of their customers (patients) by demonstrating that they could provide healing services at reasonable costs to their customers.

Today, we find greater emphasis on prevention among some health care managers and in some health care systems. In some instances, this shifting priority is quite real and tangible. Typically, this new emphasis on prevention is occurring because prevention is more financially viable, under certain conditions, than effective but often costly treatment programs. In other cases, increasing attention to prevention is more a matter of rhetoric and appearance than a sign of real shifts in attention. *Prevention* is often added to the vocabulary of health care managers and the plans of health care systems they administer, primarily to make their services appear more attractive.

The same is often true of alternative health care options that are covered to attract members. These alternative healthcare options

are usually inexpensive, even though they have often not been proven to be effective. By contrast, health care managers often refuse coverage of bone marrow transplants for cancer treatment because this treatment modality hasn't been sufficiently proven. One suspects that expense, rather than patient welfare, is the real reason for the refusal of coverage for many bone-marrow transplants.

We would suggest that prevention still has been given secondary attention in most sectors of the managerial culture, despite the rhetoric and verbal commitments. Furthermore, we propose that when an emphasis on prevention does occur, this shift in priorities might tend to reduce the anxiety of the managers; however, it is not likely to reduce the anxiety of those who are receiving health care services. They are accustomed to treatment plans and dependency on health care professionals. Prevention requires a shift in responsibility back to the patient. This is not very reassuring for most patients. Thus, the rhetoric of prevention might not even be an effective marketing strategy.

Members of the managerial culture have also traditionally valued access. In the past, this emphasis on access helped reduce the anxiety experienced by both managers and clients. Managers could count the number of patients being served and take pride in the provision of maximum service at minimum cost. Citizens could feel assured that treatment was at hand if they needed it.

Today, this assurance is no longer warranted. Americans can no longer trust that they will receive adequate treatment—unless they are wealthy. Healthcare managers also no longer feel comfortable in counting the number of patients served. They now must take costs more fully into account and often seek less rather than more patient contact. When access is valued, it is sometimes presented in a very condescending manner on the part of the health care managers: "Be glad you're getting something!"

Accountability is also valued by the managerial culture. This emphasis is intended to reduce anxiety for both manager and clients. Taken to the extreme, however, this emphasis on accountability can produce a bean-counter mentality. Furthermore, for many members of the managerial culture, accountability primarily relates to another managerial value, namely profit. This emphasis on profit and efficiency, in turn, is intended to reduce only the anxiety of managers.

Patients typically couldn't care less about profit. In fact, they often take great offense when they discover that their illness, injury, or health is a source of profit for another person or institution. The managerial culture's emphasis on profit creates a climate of indifference when taken to an extreme. People in the managerial culture sometimes lose touch with the real reason for engaging in the business of health care. A dominant concern for profit leads eventually to indifference about the primary customer: the patient. Many people from the management culture, including accountants, information services technicians, insurance agents, and members of the human resource staff, have little contact with patients.

The Advocacy Culture

Representatives of this culture view their world primarily through the prisms of revolution, war, and peace. This is the orienting dichotomy of the advocacy culture. We propose that advocates are primarily anxious about disruption in the social system. Just as members of the managerial culture are fearful of organizational chaos, advocates are fearful of societal chaos. In the United States, advocates try to thwart societal disruption by placing a great deal of emphasis on individual rights. They defend the rights of the underdog, ensuring that each citizen receives their rightful access to health care services.

In devoting their primary attention to individual rights, American advocates are sometimes inclined to forget or downplay the other

half of the equation: collective responsibility. In their attempts to avoid the death of their society, advocates often fail to recognize the responsibility that all members of society must assume in sustaining this society. On the other hand, advocates provide an invaluable role to the social systems they serve by seeking compromise and by ensuring that there is equitable distribution of those resources that are most central to the pursuit of life, liberty, and the pursuit of happiness.

Members of the advocacy culture find meaning primarily in the establishment of equitable and egalitarian policies and procedures for the distribution and use of health care resources within the system. Members of this culture firmly hold assumptions about how to organize for maximum effectiveness. They emphasize negotiation and compromise, the establishment of solid power bases, the forging of alliances, and the provision of convincing evidence for their point of view. Any organizational strategy that is acceptable to those affiliated with this culture must address the anxiety associated with social disruption and must consider politically based strategies. As in the case of the alternative culture, the advocacy culture has usually served as a counterpoint to the managerial culture, and to a somewhat lesser extent to the professional culture.

Members of the advocacy culture tend to value both confrontation and compromise. They encourage fair bargaining among constituencies with vested interests that are inherently in opposition. These conflicting constituencies may be management and staff, or, at a broader level, the healthcare institution and potential healthcare consumers. Advocates tend to hold assumptions about the ultimate role of power and the frequent need for outside mediation in a viable health care system. People from this culture have the authority to touch the whole of the health care system through social policy development.

Historically, prevention has been of primary concern to advocates. Beginning with the attempts to clean up city streets

and continuing through the recent efforts to clean up our global environment, the attention of most advocates has been focused on prevention rather than amelioration. Prevention is intended to reduce anxiety for both advocates and citizens. Anxiety is also reduced through this culture's emphasis on access. Political rhetoric tends to dominate the advocacy culture. This rhetoric sometimes substitutes for tangible improvement in the health care system. When misdirected, this rhetoric can lead to a proliferation of healthcare legislation and policies.

Advocates value electability, which specifically reduces the advocate's own anxiety. A climate of expedience is created when the advocacy culture is taken to an extreme and when this emphasis on electability moves to the forefront. Eventually, members of the advocacy culture may begin to do anything and say anything to get elected or appointed.

People who take this culture and its values to an extreme can forget why they got into the health care arena in the first place. The electorate, whether this be the voting public, members of a union, or representatives of a community association, collude through their skepticism and cynicism. Trust is lost and with it an ability to easily take actions that are meaningful. The media treat advocacy as a political game, ignoring the importance of the outcomes. Politics becomes personality.

The Alternative Culture

Members of the alternative culture tend to view health care as a process for sustaining and enhancing life rather than deferring death. This perspective is represented in the old Chinese tradition of paying a physician for every day of health and not paying the physician when one gets ill. Unlike members of the professional culture, those who are most aligned with the alternative culture tend to think of disease in direct contrast with the well-lived life. The alternative perspective concerns not the fact that death is

inevitable, but that dis-ease inevitably comes with a life that is out of balance.

Members of this culture are most afraid of being seen as quacks or judged crazy, wicked, or foolish. They spend a considerable amount of time thinking about the meaning of life and often devote themselves to alternative health care precisely because of this life commitment. Therefore, when their work is criticized or discounted, they are particularly wounded. What if there is no spirituality? What if these healthcare models are found to be inadequate? Voice, confidence, and credibility are important. Members of the alternative culture often find themselves on the defensive. They are often defined by what they oppose rather than by what they support.

The alternative culture touches communities of believers. Whether this is a Tai Chi club, a group of people dedicated to eating a particular diet, or an institution formed around a set of spiritual beliefs, there is a clear set of beliefs and a community that provides support. As in the case of clinicians, alternative practitioners assume the authority to touch people. However, they touch people to heal not only their bodies, but also their souls. They seek to heal the whole person. This authority to touch is given to them by both the individual and the community to which they belong. Prevention and amelioration are equally important. The emphasis on both prevention and amelioration is intended to reduce anxiety for both clinicians and recipients.

Members of the alternative culture have strong theories about how to organize for maximum effectiveness. These theories often focus on the retention of flexibility and promotion of continuing dialogue and innovation, while also demonstrating thoughtfulness and credibility in a still-skeptical outer world. Members of this culture would welcome a strategy for organizational change—if it helps reduce their anxiety regarding non-acceptance and the ultimate meaningfulness of their work in the life they have chosen to live.

This culture has always played a marginal role in the North American health care system. It has been populated by faith healers, herbalists, and foreign-trained practitioners of ancient healing arts. Alternative healers have operated spas, provided massage and offered televised instruction regarding new models of health and happiness. Some of these practitioners have been charlatans, while others have been visionaries and insightful innovators.

Alternative healers and their often-controversial methods have usually served as counterpoints to the dominant medical orthodoxy of their time. Alternative medical practices have often been set against those medical practices that are represented in and by the professional culture and, to a varying extent, are also represented in and by the managerial culture. We find an emphasis on home-based treatments rather than reliance on treatments in a doctor's office or at a nearby hospital. A push in South Africa, for instance, of home treatment for high blood pressure has proved to be not only popular but also effective. Better outcomes are obtained when compared to clinic-based treatment (https://www.nejm.org/doi/full/10.1056/NEJMoa2509958?query=health-policy).

When we move past this theme of contention and anti-establishment opposition, we discover that alternative practitioners find meaning primarily in the creation of programs and activities for comprehensive health care that cross over traditional health care boundaries. Alternative healthcare practitioners also find meaning in fostering the personal and professional growth of all participants in their healthcare community. They are inclined, in particular, to view their patient as a partner rather than an object of care. Members of the alternative culture hold assumptions about the inherent desire of all men and women to attain and sustain their own personal

health and maturity, while helping others in the community become healthier and more mature.

Representatives of the alternative culture seek to alleviate anxiety among those whom they serve. In seeking to fulfill this function, they provide a unique understanding and possible treatment of illness, pain, and death. They say: "You are a whole person, and you need to understand that one's dis-ease is part of one's spiritual being." It is assumed in this culture that a patient's community and support systems can be engaged to make a difference in how the patient copes with illness and creates health. Members of the alternative culture suggest that they can provide competent treatment because they are skilled in new or very old ways of doing healing work. This culture focuses on empowering each individual to find and understand what illness, death, and pain really mean. Alternative practitioners encourage their patients to listen to their own voices and create their own healing and good health.

It should be noted that in recent years, some shifting of the alignment of alternative medical practices with traditional (allopathic) medicine has occurred. At one extreme is osteopathic medicine, which is now fully aligned with and incorporated into traditional healthcare institutions. Actually, a majority of the physicians now entering many sectors of contemporary medical practices—particularly family medicine—come from schools of osteopathic medicine. Other alternative practices, such as chiropractic medicine and acupuncture, have aligned most of the way with traditional medicine. Referrals are often made by primary care physicians to these "complementary" forms of medicine. Some of the other alternative forms of healing, such as Christian Science, remain firmly unaligned with allopathic medicine.

In addition, some medical related practices might be considered Auxiliary medical services. These include such endeavors as physical therapy, behavioral medicine, wellness programs, and

even psychotherapy. These services are often provided either inside existing medical facilities or in separate, independent facilities, with practitioners working in these facilities often being dependent on referrals from primary care physicians.

These auxiliary practices have been brought into the fold of traditional medicine partly because they have been found to enhance the outcomes achieved by the use of traditional treatments (such as medication, radiation, and surgery). Physical therapy, for instance, is of benefit as a follow-up to many surgical procedures. At the same time, wellness programs and psychotherapy have been shown to support medical treatment of substance abuse. While these findings are compelling, there are still lingering doubts among many allopathic practitioners that these "other" modes of treatment are anything other than new versions of those old-time "quackeries."

In the midst of all these shifts, doubts, and discoveries, the patient is often unaware of the degree of alliance and interdependence of these fields of alternative and auxiliary medical practice. The patient is usually only interested in one thing: is this form of medical practice covered by my insurance? They may have positively received the marketing pitch made by their healthcare system that a "full range of complementary medical practices" are now available to serve all their medical needs; however, when they actually attempt to sign up for these services, they are likely to find that they are only available upon referral from their family doctor and that they are not necessarily covered by their insurance plan. Complementary? Yes! Are they fully integrated with existing services? Usually, the answer is No.

The Virtual Culture

Accompanying VUCA-Plus (and accelerating its presence and power) is the technological revolution that has impacted all sectors of 21st-century societies—including health care. Those in health care systems who are aligned with the virtual culture

conceive of their responsibility as an engagement and use of knowledge and expertise that is being produced and modified at an exponential rate in our postmodern world. Philip Rosinski (2003, p. 54) notes that someone who embraces the virtual culture "values a dynamic and flexible environment, promotes effectiveness through adaptability and innovations, and avoids routine which is perceived as boring."

Those aligned with this culture tend to value a global perspective and make extensive use of open, shared, and responsive learning systems. They are participants in what Thomas Friedman (2007) describes as a "flat world," which has abandoned organizational and national boundaries. Furthermore, with the exponential growth of Artificial Intelligence (AI) in the field of medicine, these healthcare workers are likely to be fully wrapped up in this new technology. While AI might be threatening in many regards, it is also "here to stay" and holds the potential of vastly improving the quality of medical diagnosis and treatment.

Leaders who are aligned with this culture speak about learning organizations. As Peter Senge (1990, p. 4), one of the early proponents of the learning organization, has noted: "The organizations that will truly excel in the future will be the organizations that discover how to tap people's commitment and capacity to learn at *all* levels in an organization. Learning organizations are possible because, deep down, we are all learners." Furthermore, as we have already noted, we should not avoid taking risks and making mistakes. However, we should avoid repeating the same mistakes and taking the same unsuccessful risks. This is a major refrain in Salus-P3: we should learn from our mistakes (as well as our successes).

Members of a health care system who are aligned with the virtual culture tend to embrace many untested assumptions about their ability to make sense of the fragmentation and ambiguity that exists in the postmodern world. (Bergquist, 1993; Bergquist and Mura, 2005) They typically are quite wise and

skillful in making use of digital technologies. They are likely to be frustrated in working with those members of their health care system who are not readily accessible via some portable digital device. These members of the virtual culture are inclined to work quickly and decisively with clients via many different media. As they increase in number, members of the virtual culture are likely to soon dictate many healthcare practices.

Healthcare leaders who are oriented toward the virtual culture are likely to conceive of the development of those working for them as a matter of "just-in-time" linking of learning needs to technological resources that enable access to a global market and learning network. Mobile devices are the new classroom. A virtually oriented leader will be actively engaged in setting up their own network of leaders from other health care organizations who share a similar perspective regarding technology and global sharing of information.

The health care leader who operates out of this particular frame of reference is involved in a balancing act in their creation of meaning and reduction or elimination of organizational anxiety. On the one hand, these leaders are often in the business of challenging their reports with new information regarding the postmodern world or with new points of access into a dynamic network of relationships. These challenging inquiries can shake up existing patterns of meaning and can certainly increase anxiety. On the other hand, the virtual leader is trying to be supportive of their colleagues, providing them with some sense of coherence in a world that is filled with VUCA-Plus (Bergquist, 2025).

A global network that can introduce new anxiety-producing perspectives and practices can also be the source of support and reassurance: "This challenge has been faced elsewhere and has been met successfully!") The organizational cocktail is shaken up but then stirred (to borrow from James Bond movies). The shaking up produces chaotic change, while the stirring produces

cyclical change ("this is just another of the interesting challenges we will be facing and overcoming. . . ").

The virtual leader faces a difficult task in helping others (as well as herself) make sense of this shaken and stirred-up world. It is not only a matter of digesting a large amount of information and managing anxiety. It is also a matter of thinking and acting at a very high level. Kegan (1994) suggests that we, of the postmodern era, are "in over our heads" (certainly a challenge to existing patterns of meaning and a source of profound anxiety). It would seem that these virtual, postmodern leaders are particularly needed to help others in their organization address these major 21st-century challenges.

The Tangible Culture

While this sixth culture has always been present in the health care system, it has become more salient (and even strident) with the emergence of the virtual culture. Those in health care systems who are aligned with the tangible culture conceive of their most important role as a leader in their system as the identification and appreciation of their organization's roots. They are in the business of building a community that is grounded in traditions and symbolic representation of critical values.

This organizational perspective resides at the opposite end of the continuum from the virtual culture. Labeled "stability" by Rosinski (2003, p. 54), it is a perspective that "values a static and orderly environment, encourages efficiency through systematic and disciplined work, and minimizes change and ambiguity, which is perceived as disruptive". Those aligned with this culture tend to value the predictability of a value-based, face-to-face process of interacting with other members of their organization, as well as interacting with those seeking healthcare assistance. Their anxiety is reduced through the establishment and maintenance of these value-based

interactions, as well as the preservation of traditions and history (often distorted) in the organization.

Those aligned with the tangible culture like to work with people they can see and "touch" (tangible) and work in relationships that are long-term and grounded in reality (tangible). There is nothing better than seeing their patients mature over the years. Or honoring a fellow employee for their 30 years of service at the local hospital. Leaders who are aligned with this culture are also inclined to turn for guidance to others in their system who focus on deeply embedded patterns (traditions) in the organization. Cultural change is either considered impossible or unwise. A strong emphasis is placed on the full appreciation of existing and often long-standing dynamics of the organization—this emphasis being most fully articulated by those embracing an "appreciative approach" to leadership (Shrivasta, Cooperrider & Associates, 1990; Bergquist, 2003; Cooperrider and Whitney, 2005).

Those oriented toward the tangible culture are likely to be concerned about the desire of their patient (or fellow worker) to interact via a phone or mobile device. The patient or fellow worker might declare that they have "no time" for an in-person meeting. A health care worker who is inclined toward the tangible culture doesn't feel like they really "know" this person and would much prefer to meet in person for at least a short period of time. Much more could be accomplished. As a physician or administrator, she would be much more comfortable in picking up subtle clues at a later time when interacting by phone or mobile device. If she at least has an opportunity to work with her patient/co-workers in person once in a while, then she can more effectively interact with them virtually.

Health care leaders associated with this culture embrace many untested assumptions not only about the value of personal relationships, but also about the ability of organizations to

"weather the storm" of faddish change. They conceive of the developmental enterprise in their health care system as primarily honoring and reintegration of learning from existing sources of distinctive wisdom located in their specific organization. These leaders tend to be appreciative, loyal (and sometimes a bit narrow-minded and resistant to new ideas). "The new technology is fine—but let's remember what really heals people and how organizations really navigate the turbulent waters of contemporary health care!"

Given the postmodern challenges facing contemporary health care leaders, it is obvious that the tangible coach is potentially of great value, for leaders long for reassuring strategies that are directly aligned with the tangible culture. They want to be able to meet with other people face-to-face; they seek out a time and space that is safe. When effective, the leader and clinician who is aligned with the tangible culture will help create a "sanctuary" in which their patient can talk about anything and feel deeply. This patient may have no specific agenda, nor does he necessarily want to change his health-related habits. He mostly wants to find a safe place where he can "be himself," and "talk to someone who holds no agenda other than being there for him." Or the patient might simply want to be listened to by someone who cares about the patient's personal welfare.

These tangible needs are aligned with a holistic perspective regarding healthcare. They are not easily captured in a formal statement regarding the healthcare worker's responsibilities. However, as in the case of the alternative culture, the strategies associated with the tangible culture may be immediately effective in helping to create (or sustain existing) patterns of meaning and reduce postmodern anxiety. Unfortunately, this type of healthcare service is often reserved only for those with sufficient power, wealth, or opportunity to meet over an extended period of time or to meet frequently with their healthcare. Thus, the tangible culture – more than any of the

other five cultures – is often associated with healthcare services that are reserved for the elite.

Managerial Culture Dominates: But at a Cost

Before leaving this brief description of the six cultures to be found in contemporary health care systems in the United States and, to a considerable extent, in other countries, some attention needs to be directed toward "the elephant in the room." We must acknowledge that the Managerial Culture is "in charge"—and that being "in charge" comes at great cost to those receiving health care services. A noted health policy analyst, Marty Makary (2019), identifies this elephant and the way in which the dynamics of what we are calling the Managerial Culture have dramatically driven up healthcare costs in recent years.

At the end of his disturbing account of high health care costs ("The Price We Pay"), Makary (Makary, 2019, pp. 240-241) poses an important set of inquiries that summarize this account:

> How did medicine transform from a charitable profession to one that has put one in five Americans into collections for medical debt? How did we get to the point where hospitals are scientifically advanced bastions of academic genius, but can't even tell you what an operation will cost? How did the noble profession of healing allow billing practices to become so predatory that some hospitals sue and garnish the wages of half of the people in the town they serve? How did we get to this point where American businesses have lost their competitiveness overseas because of health care costs? How did we get to a point where Starbucks spends more on health care than coffee beans and General Motors spends more on health care than steel? Or where some types of overtreatment have reached epidemic proportions, and medical error is a leading cause of death in the United States

> How did we arrive at this moment where pharmacists are contractually forbidden to tell a patient what's in their best interest, and middlemen work in a fog of transactions so opaque that a special law was passed to grant them exemption from anti-kickback laws? These money games become so accepted that ordinary people . . . are getting charged $21,000 for an ineffective minor procedure, and meanwhile, [have no idea that they are] a victim of the game.

The answer to all of these questions goes back to the emerging dominance of a managerial culture in which there is a focus not on patient services but instead on profit. A "game" of profitability is being played by those in charge of the healthcare system. As Makary (Makary, 2019, pp. 28-29) notes, this game is out of control:

> Hospitals and insurance companies spend a ton of money playing the game – the staff, the infrastructure, the subcontractors. In addition to the collection side, hospitals and insurers have small armies of business people who negotiate discounts. Doctors and nurses don't see these people. Their offices are off-campus, even tucked away in the tallest skyscrapers in some big cities. Some doctors complain about the growth in hospital administration. But hospitals have to have a lot of business people to participate in the game.

Makary (Makary,2019, p. 6) finds that this shift in perspective from the mission of service to the game of profitability is often found not just among those administering the health care system, but also those providing the services: "Sometimes [we physicians] steer patients toward what's best for them. Sometimes we steer patients toward what is best for us."

Does this game of profitability reduce the anxiety of those in the Managerial Culture? Does the game fortify members of the

healthcare community from the turbulence and contradiction inherent in the contemporary healthcare enterprise? At the very least, it is apparent (at least to Makary) that the game is widely acknowledged by those at all levels of the healthcare system—and certainly by those in the healthcare C-suites. Makary (Makary, 2019, p. 19) takes notes during a high-level meeting he attended at a fancy California resort:

> We got right to business. The group acknowledged the rising price of health care and began asking the hard questions. Maybe it was the off-the-record nature of the meeting, or maybe it was just the sea air and California sunshine, but these titans of health care spoke freely. Hospital officials confessed that they inflate bills more and more each year to generate more revenue since their insurance companies pay only part of the sticker prices. Insurers confessed they demand bigger and bigger discounts in their contracts with hospitals in order to keep up. Both acknowledged that they pass on higher hospital bills to the public in the form of higher insurance premiums.
>
> It was a lively, civil, candid conversation. At one point, Dr. Rene Lerer, the president of the large insurance company GuideWell Florida Blue, silenced the room with his honesty: "Insurers fight for a bigger discount every time they renew a contract with a hospital. Then hospitals go around and inflate their prices. It's a game." He seemed disgusted by the markup-discount games everyone in health care has come to accept as standard operating procedure.
>
> "We play it, you play it, we all play it. Let's not fool ourselves," he added. "It's a stupid game. We can do better."

While this game may be "stupid," it is the one played by those aligned with the Managerial Culture. Each of the six cultures plays a game—be it about protecting autonomy, finding an enemy, or living the life of an outlier. However, the games played by the other five cultures are not quite as damaging to healthcare as the profitability game played by those in the Managerial Culture. And those in the managerial culture "can do better."

The absence of any control over this game of profitability is noted throughout Makary's book. The failure of legislative bodies to provide any control is particularly noteworthy. Living near the National Capital and focusing in particular on Health Policy, Dr. Makary is painfully aware of the legislative lack of control (Makary, 2019, p. 14):

> After I left my meeting . . . , I passed the U.S. Capitol building. Though it was getting dark, I could still make out the flags around the Washington Monument flapping in the cool evening wind. At that moment Congress was meeting in a special session to talk about health care funding. As I passed the U.S. House of Representatives, I wondered if they had the slightest idea of what was truly crippling health care. The politicians debated how to fund health care, but what we really need to talk about is how to fix health care. While they made grand speeches and exchanged rhetorical fire on the issue of funding, the business of medicine was humming just down the street, in the churches of our nation's capital.

The "fixes" that Makary believes need to be made concern such things as the remarkable mark-up of health care costs when assigned to the payers of health care services, as well as the invisibility and variability of many healthcare prices. He writes about the "surprise bills" that often arrive at the payer's home or office, as well as the intricacies and vagaries of "out-of-network" healthcare expenses. Perhaps of greatest importance, in terms of the indifference to not just patient services but also patient

welfare, is the insensitivity to a patient's inability to pay for massively expensive healthcare services, and even the garnishing of a patient's wages. As Makary noted at the start of his inquiry, healthcare in America is now a long way from the charitable mission it once served.

We offer two disturbing examples of the kind of unacknowledged and uncontrolled sources of high health care costs that are to be found at the "outskirts" of the managerial culture. First, there are the services provided by the air ambulances [helicopters] that transport patients to the hospital (Makary, 2019, p. 71):

> . . . over time, investors in ambulance services] moved in and radically changed the ecosystem. They saw big profits if they could buy the air ambulance service from the hospital and bill the patient directly. That is, if the hospital didn't own the helicopter, the transport would not be on the hospital bill and often not be covered by insurance—the patient would be responsible for the bill. Injured patients began opening surprise bills having no idea that the trip in the bird wasn't covered by their insurance. Even when insurance would cover part of the bill, the helicopter's new private owner could go after the patient directly for the difference, a practice known as "balance billing."

An equally insightful, but disturbing, portrait is painted by Makary (Makary, 2019, p. 194) regarding the operation of a managerial culture in the domain of pharmaceuticals. Apparently, there is a giant industry of middlemen, called pharmacy benefit managers (PBMs), who play a major role in the pricing of drugs. These middlemen gain major financial benefits from managing the pharmacy benefits for an organization's employees (Makary, 2019, p. 194):

> At the bottom of a typical report is some big sum of money: the employer owes the PBM. It has the

> appearance of transparency because each pill is itemized in detail with a price. But "the spread is nowhere to be seen." The PBMs have gone to great lengths to keep the real prices secret, using a fog of fees, rebates, and discounts that make a true value too complicated for anyone to determine. Even if an employer figured out the spread on a few medications, there are thousands of these meds and they go by different names, have different comparables, different generics, different schedules and different dosages--and each combination of these variables is priced differently.

It seems that surprise and fog are frequently applied tactics within the managerial culture of contemporary healthcare. Prices rise. Confusion reigns. Powerlessness becomes embedded in the hearts of those paying the bills and those seeking to reform the system. This is the very large elephant in the room.

Conclusions

While we must acknowledge that the managerial culture is an uncontrolled elephant in the room, we are committed to constructing Salus-based fortifications of appreciation that protect the contributions to be made by all six cultures. We are also committed to constructing bridges between the fields of psychology, coaching, primary care, complexity science, and leadership. Each of these fields has its own set of cultures that often compete with one another in offering perspectives, policies, and practices related to the challenge of wishing for health (Salus!).

In this section of the book, we have offered a series of insights and several summary statements that reflect on the many challenging topics that confront those leading mid-21st Century health care institutions. We believe that a Salus-based appreciation for all six cultures, and a commitment to providing an interdisciplinary bridge, provides a pathway for effective leadership, the creation

of a caring health care system, and the nurturance of a "safe" environment for innovation and collaboration. Hopefully, we have identified some of the blocks, piers, and beams for this appreciative fortification and the construction of this interdisciplinary bridge.

Chapter Fourteen

Salus Perspectives, Policies and Practices

Culture says that when you take on the role of a sick or injured person, you are not alone. There are specific people to see. There are tests to be performed. There is assurance that you are a long way from dying. Culture in a healthcare environment provides meaning.

A health care organization is primarily in the business of reducing pain and the attendant anxiety. On a daily basis, all other functions of the organization are secondary to this pain and anxiety-reduction function. It is specifically the culture of the organization that serves as the primary vehicle for addressing the nurses' anxiety and stress associated with ameliorating the pain.

We identify six primary cultures that currently exist in North American health care systems, as well as many other healthcare systems in our world. These cultures influence the ways we interpret the nature and purpose of healthcare, as well as how we confront, reduce or find meaning and purpose in the pain and attendant anxiety associated with healthcare.

This does not mean that the professional culture values bureaucracy—a hallmark of the second, managerial culture. Members of the professional culture instead value clarity regarding who is in charge in any given instance.

There is another important artifact of the Managerial culture. People from this culture are not allowed to touch patients, as those in the Professional culture are allowed to do. However, those in the Managerial culture are allowed and hold the rights and responsibilities to touch the organization and its resources, especially money.

Prevention still has been given secondary attention in most sectors of the managerial culture, despite the rhetoric and verbal commitments.

Healthcare advocates are primarily anxious about disruption in the social system. Just as members of the managerial culture are fearful of organizational chaos, advocates are fearful of societal chaos.

Members of the alternative culture tend to view health care as a process for sustaining and enhancing life rather than deferring death.

Those in healthcare systems who are aligned with the virtual culture conceive of their responsibility as the engagement and use of knowledge and expertise that is being produced and modified at an exponential rate in our postmodern world.

Those in healthcare systems who are aligned with the tangible culture conceive of their most important role as a leader in their system as the identification and appreciation of their organization's roots. They are in the business of building a community that is grounded in traditions and symbolic representation of critical values.

The managerial Culture is dominant in contemporary healthcare. Those in this culture often play a destructive game of profitability. They are doing so by marking up costs, hiding or adjusting costs, and displaying an indifference to the financial welfare of those having to pay the healthcare bills.

Afterword

Leveraging Health Care

Many concerns raised in this book relate to two recently published books. Both are called *Making America Healthy Again*. One was published prior to COVID (Saphier, 2020). It offers a politically conservative perspective. The other was published post-COVID (Crandall, 2025). It offers a contrasting perspective that is more humanistic and liberal. Leaders of the contemporary healthcare community should give some thought to what's presented in these two documents.

Both books were written by physicians; however, these two doctors offer quite different recipes for making America healthy again (MAHA). What is their macro sense of how American health care should be changed? They've made many insightful points that are often in conflict. Like us, they've considered the brokenness and ineffectiveness of our current delivery system. And like the wise and serious perspectives offered about many other societal issues facing us in the mid-21st-century, there are major contradictions. It would be easy to establish a polarity using the viewpoints of Saphier and Crandall.

However, we wish to engage an integrative Salus appeal. When engaging Salus-P3, we should consider what is actually reasonable in what both Saphier and Crandall have proposed. Obviously, a much broader discussion is required about what's broken in our system of care. Beyond this book, we might find insights by exploring the philosophical underpinnings of our field. We could provide a review of medical history. Our upcoming volume on healthcare cultures will provide some of this history.

At this point, we might simply touch on one historical fact. As we all know, Louis Pasteur was the father of the microbial sources of disease. His work led to our extensive use of vaccines. However, at the time, Pasteur's perspectives were quite controversial. Many scientists and clinicians were strongly opposed to Pasteur. They often believed that the overall health of the organism determined whether you got ill or not. It made no sense to somehow treat a specific disease when the body operated as one integrated organ. And it certainly made no sense to treat a disease by giving someone a dose of the disease itself! You would have heard talk about a particular miraculous cure for just about everything as an alternative to what Pasteur had to offer.

We hear the same today with regard to vitamin A, steroid budesonide, the antibiotic clarithromycin, and even the old remedy, cod liver oil. These ideas about the healthy organism are not dangerous in and of themself. However, it is another matter when these "cures" serve as a substitute for vaccinations, which are being administered to kids and to all of us as a preventative measure against COVID-19 and other future pandemic viruses. Getting COVID is no big deal for kids. However, a kid with COVID being near a vulnerable grandma is suddenly a big deal. So, there are sociological reasons to protect children from certain infections.

That is part of the philosophy of Crandall's *Make America Healthy Again* group. They focus on the metabolic aspect. By contrast, Saphier focuses on lifestyle issues and believes that much too much money is being spent on ineffective medical procedures (such as vaccinations). There are some positives in the focus on both metabolic health and lifestyle issues. They are closely interrelated. Both offer valid perspectives on health. We certainly should not abandon Pasteur while entertaining broader, integrative perspectives, policies, and practices.

Bringing in Donella Meadows

So, what do we do with the recommendations presented in both versions of *Make America Healthy Again* (MAHA)? How and where would their ideas benefit contemporary healthcare? Might some of these ideas instead be counter-productive? Might they turn around and bite a chunk out of those elements of our current system that are working effectively? Perhaps, those of us operating from a Salus-P3 approach might apply our systematic analysis to MAHA. To do this, we need expert assistance to be offered by Donella Meadows, one of the leaders in this type of analysis. She has often been cited in this book.

A little background about Dr. Meadows. Donella Meadows is the first author of a major book on the limits to be found regarding the use of most resources in the world (Meadows, et al., 1972; Meadows, et al., 2004). She is also the first author of a book that focuses on resources that have no limits—these being the resources of learning (Meadows and Randers, 1992). Furthermore, Donella Meadows writes about the intractability of complex systems, yet she believed there are impactful leverage points. These leverage points provide the framework for our final, summary reflections on ways we can best live and lead in our new (ab)normal world (Bergquist, 2025).

As always, Donella Meadows is offering us a broad system-based set of recommendations regarding the best ways to navigate (and change) the new realities of healthcare. Specifically, Meadows (2025) identifies twelve leverage points that enable us (potentially) to change and improve the system in which we reside. We introduce these twelve points in what Meadows believes is the order of their increasing effectiveness (and difficulty to execute). We also provide some examples of prior use of these levers in US healthcare and relate her insights to MAHA and to other potential future uses of those leverage points that are effective yet challenging to execute.

Parameters

For Meadows, the parameter-based leverage points are the easiest to leverage. They are closely aligned with many MAHA recommendations. She places subsidies, taxes, and standards on her list. These changes typically involve numbers. In healthcare, these would be quality and safety metrics" regarding patient load, high-value outcomes, cost-per-patient in the provision of specific services, or the cost-per-bed in a hospital setting. They are most often used as leverage when leaders try to change and improve functioning in their organization. Unfortunately, these change efforts are often just window dressing." These leverage points are rarely effective over the long run.

Healthcare, like many other highly regulated industries, has seen a vast expansion in the use of metrics within the mindset of "you can't change what you do not measure". This excessive and exhaustive micro-metrics approach has likely served to add complexity and turbulence to the system, rather than directional and cultural changes envisioned by its leaders. One can imagine that the Titanic had very clear windows and polished brass as it sank to the bottom of the ocean after striking an iceberg. The cloud of activity produced by excessive focus on detailed metric puzzles can be distracting and limit much more important and effective levers that we will discuss.

We can categorize most of these parameter changes as first-order changes. They involve some adjustment in baselines and predictions during the engagement of Polystasis. Furthermore, they are often introduced in response to a lingering puzzle. At an organizational level, this puzzle might concern the standards being set in the organization. Production standards might be too ambitious, leaving the employees demoralized. The first-order answer is to lower the standard. Conversely, the production standards might be too low, leaving the employees with little to strive for. So, the standards are elevated.

At the community level, we find a real-life example in the categorization of smog in mid-20th century Los Angeles. This toxic mixture of aerial pollutants, haze, and fog filled the lungs of those living in this fast-growing metropolitan area. This issue was readily solved by lowering the standards regarding what would be labeled as smog by the Los Angeles government. There was something smoky" in the air that burned the lungs of Angelinos—but it apparently wasn't smog." In this case, we saw a paradoxical rise in the quality of air through lowering our standards yet providing practical means—in this case, the catalytic converter—to meet these lowered standards. Healthcare tends to only raise standards, which may paradoxically lock in unsatisfactory outcomes.

We find other first-order changes occurring in one of the other parameters identified by Meadows. This parameter is taxes. At all levels of government, we find taxes raised or lowered as a way to solve societal problems and/or as a way to reduce public discontent (and enable an elected official to remain in office). While there may be considerable infighting among politicians regarding tax issues, the raising or lowering of taxes is not itself difficult to initiate. It is just a matter of changing laws and regulations. All-too-often this same process is engaged in the financing of healthcare systems. Money is given or withdrawn from the support for healthcare services, often absent any evidence-based justification.

Our federal government has embarked on this very lever for Healthcare through H.R. 1 (aka "Big Beautiful Bill), which will constrain State-based Provider Tax mechanisms that have been used historically to increase funding for Medicaid payments in individual states. These Provider Taxes allowed states to leverage added Federal Matching funds to further augment the Medicaid services and payments at the state-level. By constraining this state-tax approach, the Federal Government is attempting to limit states' ability to enhance Medicaid services and funding, thus

impacting millions of people, yet leaving the states to explain to their public why they are no longer able to provide services. However, reducing Medicaid coverage and funding will likely only shift those who lose coverage to delay seeking care and then using the most expensive door into healthcare, the Emergency Department, which…thus potentially accelerating stress on our most vulnerable hospital and health systems and further destabilizing our healthcare ecosystem.

We can return to Miller and Page s (2007) distinction between complicated and complex at this point. Adjustments in tax policies may be complicated, given that a number of changes typically need to be made in the black letter" laws and black letter" taxing procedures. It is assumed, however, that changes in tax rates do not involve complexity. This is wishful thinking on the part of elected officials. Increased or decreased taxes impact a complex interweaving of household finances, cost of goods and services, societal priorities, levels of public unrest, levels of public confidence in and support for elected officials, and many other factors and forces. Any public act is rarely complicated rather than complex.

Many other examples can be offered that reinforce Donella Meadows' conclusion that parameter changes rarely are effective or long-lasting leverage points for change. We need to move away from the easy" puzzle-based solutions to those solutions that treat the issues being addressed as problems or even messes, dilemmas, polarities or mysteries.

Buffers

A second level of leverage identified by Meadows concerns the stockpile" we build in preparation for stormy weather" and lean years." Some MAHA recommendations rely on this leverage. There was a favorite leverage point for Moses when he accurately predicted lean years in Egypt and recommended that food be stored in preparation for these years. We find something

similar being recommended by government officials who suggest we store ample canned foods and nonperishable staples in preparation for a nuclear explosion (1950s recommendation) or virus outbreak (2020s recommendation).

Making use of polystatic theory, we can portray the leaders of a healthcare organization or governmental healthcare department predicting a shortfall of critical resources, resulting in a shift of the baseline (increased reserve of these resources). Making use of system dynamics terminology, Meadows specifically points to the sizes of buffers and other stabilizing stocks, relative to their flows. She is suggesting specifically that buffers should be large if a long period of reduced or unstable flow is anticipated. Flow refers to the input of tangible resources such as food, water, and energy. Along with Donella Meadows, we would also add less tangible resources such as human talent and motivation, education, interpersonal trust, institutional reputation, public confidence, and tolerance for ambiguity (versus appeal of authoritarian perspectives).

While large buffers are attractive (and often recommended by financial gurus), they also can be quite costly. As any smart businessperson knows, large inventories are very expensive. They are costly not only because of the space they fill, but also because they are resources that are not being used. A silo filled with rotting grains is just as unsound as a refrigerator filled with rotting vegetables. Rainy days may come and go, but unused food will always rot and be thrown away (accounting apparently for about 40% of the food we purchase). Even if the resources don t rot," they are worthless" if never used.

For instance, human talent that is never appreciated will be worthless." Furthermore, the person who possesses this talent—and may have expended time and money acquiring this talent—will certainly not appreciate being ignored. The appreciative perspective that infuses much of the writing in this book directly

addresses the value of uncovering and making full use of human resources.

This second leverage point is directly relevant to several other concepts we have introduced. First, Meadows introduced a dynamic perspective regarding the nature of systems when considering the role to be played by buffers. We have emphasized this perspective throughout this book—beginning with the notion of Polystasis. Large buffers (substantial stockpiles) not only prepare for weathering" a time of scarcity. These buffers also tend to reduce the need for frequent polystatic adjustments in baselines and projected actions.

If we have placed a large amount of money in the bank, then we need not modify our supermarket shopping habits when the price of food goes up. A large college savings account enables our teenage child to attend their favorite university regardless of rising tuition levels. Yet, as just mentioned, buffers are costly. At times, it might be better to allow for the agility of our polystatic processes that embrace the more static state of a large buffer. Most importantly, consideration of buffer size requires a shift from first-order to second-order reasoning. We must slow down our thinking, test our assumptions and priorities, and remain open to revised baselines and views of reality on our way to decisions regarding the size of a buffer.

A fairly broad historical example of Healthcare Stockpiling was developed in the 1960's when Health Plans began to stockpile pharmaceutical products and management into what are now called Pharmacy Benefit Management organizations. Resources were stockpiled into these new organizations in order to help manage the complexity of pharmaceutical costs—essentially built on the premise that more intensive focus on pharmaceutical management through these newly formed "pharmaceutical banks" would provide leverage against the rising costs of medications.

Although there were signs of early wins in this regard, these PBMs began to expand and consume Pharmacy chains in the 1990's and developed often deceptive ways of demonstrating "cost constraints" that ultimately have made them a key inhibitor of cost-containment in the medication domain. What began as a simple way to bank medication management evolved into massive new vertically integrated institutions that are part health plan, part medication management, part medication distribution that often lock in prohibitive pricing and buffer Big Pharma from pricing constraints.

Another important matter must be addressed regarding buffers. They require slow, reflective thought. These matters concern the kind of resources being stockpiled and the purpose of this stockpiling. What are we saving? Is it money, food, or some other tangible resource? Have we ignored less tangible resources such as relaxation time, goodwill (serving the underserved), or happiness? Moses was saving grain for the future famine. Did this mean that some people in Egypt were now being starved? We might be ignoring other family priorities when saving money for our teenager s education.

Structures

The third way that Meadows suggests for leveraging change is by altering the structure of material stocks and flows. This ambitious leverage is often the favorite of those advocating large-scale reform, such as we find in MAHA. However, the actual engagement of this leverage point is quite challenging—and usually very costly! This leverage point centers on logistics. It involved highly diverse matters ranging from transport networks to demographics (population age structures"). We already began to approach this third leverage point when suggesting an inquiry into the content of buffers that are being established.

Operating as stocks," the buffers we establish operate in quite different ways and have a different impact on the system if they

involve trust rather than money, or they are composed of facilities rather than reputation. The baselines in a polystatic system will also look quite different if they involve intangible rather than tangible stocks. Many of the buffers/stocks and many of the polystatic baselines actually blend tangible and intangible resources: trust and money go together, as do the size of a facility and the reputation of the institution operating in this facility. An emphasis on being BIG" in a healthcare system requires an expansive size of not only physical structures and workforces, but also credibility and (often) command of the marketplace. Accountability is critical.

In making the case for accountability in the American healthcare system, Elizabeth Bradley and Lauren Taylor (Bradley and Taylor, 2013, p. 194) refer specifically to the insights offered by Donella Meadows:

> In her book Thinking in Systems, Professor Meadows highlights the need to locate accountability in a complex adaptive system so as to optimize outcomes. In the United States' health care sector, putting Meadows's teaching into practice would mean identifying ways by which actors (for instance, hospitals) feel the impact of their actions on other elements of the system (for instance, homeless shelters) and therefore have an incentive to limit the negative effects on other elements in their shared system.

It is at this point that Bradley and Taylor (Bradley and Taylor, 2013, p. 194) point to the existing simplistic mindset of the American public:

> In a similar but slightly different way, we expect some readers will be bothered by the lack of a simple prescription and therefore disengage from the matter altogether. Generally speaking, Americans are an impatient and skeptical lot, focused mostly on actions that will render immediate and impressive results. When Prilosec, a drug to alleviate the symptoms of heartburn,

> was at its commercial peak, Americans spent more than $5 billion per year on it, rather than changing their eating habits to avoid the onset of heartburn in the first place. The medical course of action takes fifteen minutes; the alternate may take months or years. It is easy to see how, in a culture of anxiety regarding time, the Prilosec option is preferred. The trouble is that Prilosec addresses the symptoms but masks the underlying dangers of poor eating habits, which in fifteen years could land one in the hospital with a heart attack. Short-term success, in this case, breeds long-term failure. And the inconvenient truth of health care is that people change habits slowly.

The challenge, therefore, is to address the inconvenient truth of suborn habits of thought. Was this challenge met with the passage of the Affordable Care Act? This act did introduce two new accountability-related structures into the healthcare ecosystem: Accountable Care Organizations and State-based Health Exchanges. These new healthcare structures are intended to introduce new cultural expectations of accountability and state oversight of the flow of information and resources. Accountable Care Organizations have primarily been focused early on within Medicare. They incentivize more collaboration across healthcare entities with an accountable board of directors made up of a majority of practicing primary care physicians.

This profound shift in accountability away from traditional business stakeholders to practicing primary care physicians had very early wins, with millions of dollars saved and quality outcomes improving in the early years as practicing primary care physicians used their newfound leverage to influence the flow of resources to advance primary care access and reduce unnecessary Emergency Department utilization and hospitalization. However, these shared savings and shared-risk models soon found themselves needing to continue these early wins with clear signs of diminishing returns. The image of "squeezing a fruit for shared savings" turned into "being left with rinds and fines for not meeting cost-reduction metrics," and many of these early

Accountable Organizations dissolved. After early expansion and various efforts to expand into commercial markets and new Medicare models, this movement has essentially lost steam.

The second new structure introduced by the Affordable Care Act was the State-based Health Exchanges, essentially creating a new state-organized private-public healthcare marketplace for individual health insurance that has heavy federal subsidies, providing millions of people with access to healthcare coverage at vastly reduced premiums for those working folks who don't qualify for Medicaid yet can't afford private commercial health coverage. This new bridge between Medicaid, Medicare, and Commercial health coverage faced potential collapse if Congress and the President failed to renew Federal subsidies that were enhanced during COVID-19. This provision did fail to pass Congress in late 2025, leaving millions of people facing 75% increase in their insurance premiums in these State-based Health Exchanges.

These major new Healthcare structures have taught us a great deal about the resilience and inertia within American healthcare. Even massive new structures may not be sustainable over time if higher-order cultural shifts do not underpin them.

Meadows expands this notion of structure when including flow. For instance, what is the mechanism engaged in the flow of information? Contemporary politics throughout the world has been profoundly impacted by the emergence of digital media as a replacement for printed media for many people. Resources such as food and automobiles become immediately available on a global basis as a result of air travel. The world has become flat (Friedman, 2005) or dangerously curved (Smick, 2008) because both information and resources are flowing" in quite different ways than was the case even 20 years ago.

Donella Meadows is justified in suggesting that structural changes are more likely than changes in either parameters or

buffers to be effective levers in contemporary systems. However, in this book, we have been guided by Goodwin Watson, who suggested that structural changes are rarely as powerful as changes in processes or attitudes (Watson and Johnson, 1972). However, structures are easier to change. As with parameters and buffers, structural changes are typically first-order. They bring about more of something or less of something. They speed up or slow down existing processes. They intensify or dampen existing attitudes.

By contrast, a second-order change requires introducing a new structure or significantly altering the old structure. For instance, automobiles are designed to travel at much faster speeds and are aided in their speed by multi-lane freeways. However, they are still automobiles and still need fuel (whether gasoline or electricity). This is a first-order change. We don't really change things by moving resources by rail or air. There is still the matter of travel time and consumption of energy. Along comes the ability to bring people together virtually and to build things via the Internet. Digital communication devices such as Zoom enable people to meet together without having to travel by plane, train, or automobile. 3-D Printing enables companies to build prototypes of their newly designed products and, in some cases, to manufacture and mass-produce the product virtually. Augmented reality provides an opportunity for people to visit faraway places without ever leaving home.

Second-order changes have taken place that do more than speed up or slow down an operation. It is not just quantity that is altered. It is the way that this quantity is transported. These second-order operations change in fundamental ways. Among other things, they alter the delay in the flow of information or resources (the fourth leverage point to which we are about to turn). They also shift the rate at which polystatic processes take place: baselines and predictions must be quickly altered. Slow

thinking is easily replaced by knee-jerking fast thinking and heuristics.

In many ways, as a result of this demand for fast thinking, the structural changes being made in mid-21st Century societies are reinforcing rather than altering existing processes and attitudes. As we have recently discovered, there might be a regression back to old ways of thinking and acting while we search for the silver bullet and seek out a rabbit hole enabling our return to Serenity. We must await Donella Meadows' identification of more powerful (but often more elusive) leverage points.

Delays

The fourth leverage point identified by Donella Meadows is Delay. She asks: What is the length of delay, relative to the rate of system change? If the system is rapidly changing, then delays are that much more disruptive. Using Peter Vaill s metaphor, we have portrayed mid-21st-century life as a turbulent stream we must navigate. This white-water environment is created by rapid rates of change in the water. Rapidly flowing water is disrupted by obstacles (such as rocks and fallen tree limbs) and inevitable minor changes in water pressure and flow velocity. Unsteady vortices create drag, increase friction, and cause disruptions. These disruptions create delays. This leads to turbulence. As noted, the more rapidly the water moves, the greater the turbulence. The same can be said of our mid-21st century world. Rapid movement and many disruptions create delays and turbulence.

In this book, we have devoted some amount of attention to the delay function as it operates in most systems. The concept of delay is one of the most important contributions to be made by Donella Meadows and her System Dynamics colleagues. Delay plays a critical role in the polystatic process. Sometimes there are delays in our adjustment of baselines, alteration in our predictions, and decisions regarding action to take. These delays may be required,

especially if we must engage in some slow, reflective thinking. However, delays can also create many problems. Our environment might have changed while we are re-thinking and re-adjusting, thus making our polystatic process less effective. Frequent delays can create turbulence" in our own behavior. We are erratic and unpredictable, making it hard for other people to work with us.

In their landmark Public Health 12 Framework article, Bolton and Associates (Bolton et al., 2022) introduced the Delay lever as "Strategic planning to align timeframes with available resources, current readiness, and intended outcomes". This delay is intended to slow down and cast a long-term lens on internal and external threats, challenges, and opportunities to explore a shift toward a newly anticipated future state. Many healthcare entities embark on strategic planning processes every 3-5 years to help adapt to an ever-changing healthcare ecosystem.

At the Federal level, the National Academy of Science, Engineering, and Medicine (NASEM) regularly produced broad healthcare strategic plans to reform and even transform our healthcare ecosystem. One such report was the 1999 NASEM report (then called IOM, or Institute of Medicine) report, "To Err is Human," which offers an excellent example of successful strategic reorientation of healthcare. Prior to this report, Safety was often an afterthought in healthcare systems—and was often left to the individual physician, nurse, or other healthcare professional to address on a single-patient case-by-case basis.

In general, most quality and safety matters were delegated to physicians within a peer-review process in which individual physician decisions and care were scrutinized only by peers in a discovery-protected environment that emphasized individual performance and quietly addressing individual adverse cases through education and punishment of single physicians, while protecting the individual physician from malpractice impacts whenever possible.

The IOM/NASEM Report in 1999 exposed the systems improvement shortcomings of this approach and introduced the need to look outside of medicine for systems-based approaches to the reduction of harm due to mistakes and mishaps—like the Nuclear industry, the Airline Industry, and military. Teamwork, effective communication and feedback, and a broad-based, inter-professional review of adverse events emerged through new processes such as Root Cause Analysis, Sentinel Events, and other safety-focused approaches from outside of healthcare. Although serious safety events still occur across all hospitals, this IOM/NASEM Report strategy very successfully introduced and prioritized patient safety above many other priorities in health delivery systems that we continue to learn from today.

All of these engagements require some second-order reflection on our polystatic process. How do we shorten the delay without becoming fast-thinking, heuristically constrained actors? Second-order change might lead to greater reliance on other people for assistance. We stand at a busy four-way intersection and ask our companion to help us look in all four directions before crossing the road. We seek new sources of information regarding our environment or faster ways to process the information we have received about our environment. Perhaps we are looking at the wrong things or setting inappropriate priorities.

One final point, delays can create new issues or alterations in the current issue. A problem that contains many delays becomes a mess. Delays caused by several disruptive factors can transform a problem into a dilemma. There often are delays in our response to pulls within a polarity. We continue to swing back and forth between the positive and negative sides of each pole; however, these swings are delayed by distractions, dithering, and discouragement. As a result, the swings can become more severe and erratic. Polarity is joined by Turbulence. Our world becomes much more complex and ultimately more mysterious.

Moderators

A fifth set of leverages is identified by Donella Meadows. These are the moderators that determine the strength of negative feedback loops, relative to the impacts against which they are trying to correct. One of the central principles of systems thinking and system dynamics is that all systems must contain positive and negative feedback loops. Taleb s power law" exemplifies positive feedback loops that are running free" without any inhibiting negative loops (Taleb,2010). These unregulated positive loops can lead to disastrous outcomes, whether we are looking at population explosions or corporate takeovers.

Moderators are people and organizations (or natural forces) that push against the power law. The people might be members of the judicial system or the voting public. Organizations might be regulatory agencies in government or advocacy groups. Nature forces might be a fever that raises body temperature to fight infection, activating the immune system, and suppressing pathogens. It might also, tragically, be a virus that runs rampant in a crowded third-world country.

As Meadows suggests, a key decision to be made by a moderator concerns the strength of a negative feedback loop. The negative loop can be too strong. It either kills the entity it is trying to save or leads to a state of stagnation in the system operating in this entity. The fever can burn out the physical resources of an ill patient. The virus can decimate the population of a third-world country. Stagnation is widespread in heavily regulated organizations where bureaucracy and protocol always snuff out innovation and risk-taking behavior.

Likely the most prominent, day-to-day Moderator for major healthcare delivery systems in the United States (and abroad) is the regulatory body, The Joint Commissions, a not-for-profit organization primarily funded by Fees paid by the Healthcare entities they regulate, that began in the 1950's to set standards for

Hospitals and became very influential in 1965 when the new Medicare bill linked accreditation by The Joint Commissions (known as JCAH at that time) with eligibility to be paid by Medicare and Medicaid health plans.

Although Physician organizations (American College of Surgeons, American College of Physicians, and the American Medical Association) were founding partners for The Joint Commission, it has now taken on a life of its own and expands quality and safety metrics at an astonishing speed, has impromptu visits to health systems that now require advanced, prepared teams of Administrators and data-gathering specialists, policy reviewers to keep up with updated standards.

The vast expansion of metrics has, as mentioned previously, turned a standardization regulatory process into a rather frenetic micro-metrics collection process that may do less to improve healthcare delivery systems than overwhelm them with data-collection and micro-improvement projects that often confuse and confound physicians working in these systems. As happens with most US-based regulatory processes, the emphasis has shifted from improving care outcomes to providing massive amounts of paperwork, self-reporting, and change processes that are likely to consume a large amount of healthcare energy.

There is no doubt many important changes have been led by The Joint Commissions approach, yet there are many calls now for more parsimonious approaches to healthcare quality, safety and patient experience metrics to amplify leverage toward the most important outcome improvements, rather than hundreds of mini-metrics, including the most recent NASEM report called "Valuing Americas Health: Aligning Financing to Reward Better Health and Wellbeing" (National Academy of Medicine, 2024).

The negative loop can instead be too weak and lose its battle against power-law-driven positive loops. We see this operating in societies where authority and power are unregulated. It can also

be witnessed in the narcissistic behavior of fathers and mothers who run roughshod over their children, or the narcissistic behavior of organizational leaders and political leaders who run roughshod over the people they are supposed to lead and serve.

A critical role is played by the polystatic process when it helps to apply brakes to a run-away system (where homeostasis is nowhere to be seen). Polystasis requires us to reexamine the reasons for and review the power being engaged by any negative (or positive) feedback process. As Miller, Galanter, and Pribram did in setting up the T.O.T.E. system, there is tight monitoring of outcomes and frequent correction of over-engaged accelerators or decelerators.

This tight monitoring often requires that we slow down a bit and consciously reflect on the operations of our moderators (whether these exist inside our psyche or exist outside in the judicial or legislative branches of our government). Our psychosocial template might have to be adjusted (first-order change). Second-order change may be required to increase or decrease the power of a negative feedback system. Are appropriate brakes being applied, or is the moderator over-regulating? A new psychosocial template is engaged.

Regret re-enters the dialogue at this point. Regret is a dampener. It is one of the most powerful moderators in our personal psyche. It also operates in the public sector when we regretfully determine that the elected officials are not doing their job and should be thrown out of office. Fear of loss also serves as a brake and (for good or ill) can block the force of hope and aspiration.

A pre-mortem can be implemented before initiating a new project. Realistic expectations can be set that counter overestimations (positive loop) of success that can deepen the downturn of a change curve. Moderator guidelines can be established to determine if a project is not working as planned and should be

terminated (negative loop) or if there is sufficient energy and talent to stay with the project for a while longer (positive loop).

One other factor should be considered in setting up a moderator. This factor is the self-fulfilling prophecy. A negative self-fulfilling prophecy leads to undue pessimism and an overly powerful negative feedback loop. I know this isn t going to work and I am just waiting for the first sign that it is not working. Then I will pull the plug!" This negative perspective can be associated with an external locus of control: There it goes again. Fate has squashed it once again!" It can also be associated with an (internal locus of control: We messed it up again. Can t we ever get it right!"

An equally disruptive dynamic operates with a positive self-fulfilling prophecy. While this can lead to success—optimism and hopefulness are always beneficial (Seligman, 1991/2006; Seligman, 2012; Seligman, 2018)—the positive prophecy can also lead to unrealistic expectations, a deep-dipping change curve, and ultimate disillusionment. As we have noted, the recalcitrant who opposes any new idea is often a former optimist who was burned out when initiating a project earlier in their life in the organization. Thoughtful and critical reflections on self-fulfilling prophecies during a pre-mortem will assist the selection of appropriate moderators. These polystatic-related processes also help to prevent the harm inflicted on those stifled by overwhelming negativity or burned out by unrealistic positivity.

Accelerators

The sixth change strategy resides on the opposite side of the leverage spectrum from modulation. Accelerators promote gain by driving positive feedback loops. The often-overwhelming condition of complexity can be manageable at least in part through the systemic analysis of ways certain elements in a system are connected to and enable other elements to succeed. While the interconnectedness of elements in a complex system can make it hard to discern where to begin and what to do, we can

focus on those elements (often nodes on a network) that offer these enablement properties. As accelerators, the enabling elements produce positive feedback loops that bring about win-win" situations in which the success of one element positively influences the successful operation of a second element.

More broadly, certain attitudes tend to be accelerators. These include attitudes featured in the recent push toward positive psychology (Seligman and Csikszentmihalyi,2000). We can include Martin Seligman s focus on hopefulness and optimism (Seligman, 1991/2006; Seligman, 2012; Seligman, 2018) (1991/2006), George Vaillant s (2012) study of vibrant late lives, and Mihaly Csikszentmihalyi s (1990) identification of Flow as a strong motivating (and accelerating) pull in the life of rock climbers, dancers, paper-clip twirlers (micro-flows), and the life led by many other people.

Accelerators are often associated with a general attitude of optimism. We believe that sacred and/or secular forces operating in our world are ultimately benevolent and that we have considerable control over our life s outcomes (internal locus of control). This optimism not only fuels" (accelerates) our actions, but also increases our physical vitality, our capacity to fend off illness, and our ability to persevere despite encountering obstacles (Seligman, 1991/2006; Seligman, 2012; Seligman, 2018).

One strong example of an Accelerator, or positive feedback loop, in healthcare began in Rhode Island when the state's Insurance Commissioner, Christopher Koller, began in 2010 to incentivize increasing Primary Care investment and demonstrated that this increased investment positively impacted health outcomes while reducing the overall cost of care in Rhode Island. Rhode Island saw a near-doubling in investment in primary care to 12.3% by commercial health plans, while capping overall spending on healthcare to the Medicare Index + 1% by 2018.

Several other states have followed this positive feedback loop, which in many ways introduces both a positive feedback loop "increasing investment in primary care" with a moderating function "limiting growth of spending overall for healthcare in the state" as a powerful new lever. California recently introduced the Office of Healthcare Affordability (OHCA), which set new voluntary primary care spend targets from the current rate of 5% to 15% by 2034, including a 0.5% - 1% incremental increase annually in 2024.

This ambitious Accelerator has generated impressive momentum for enhancing the team-based workforce for primary care services, and efforts are underway to establish meaningful accountability for health plans and health delivery systems across California to meet or exceed these new state-based primary care spending targets. Combining Accelerator and Moderator levers has provided policymakers with a responsible way to begin shifting the distribution of healthcare resources toward state priorities, which will begin to reverse decades of underinvestment in primary healthcare in all 50 states over time.

The role of hopefulness and optimism as accelerators plays out directly through the polystatic process. When we are hopeful/optimistic, our baselines are likely to be set at high levels because we perceive our environment as being benevolent and the outcomes of our actions positive. These connections suggest that Polystasis can be critical in initiating accelerators, Positive self-fulfilling prophecies can be in full operation. We may embrace an internal locus of control, believing that we are capable of achieving success. I/we are on a roll. Nothing can stop me/ us now!")

As a result of this optimism, we persist in our efforts to achieve this success. While we may encounter roadblocks, they will alter our tactics and strategies but will not force us to change our baseline. We retain our aspirations and our optimistic perspective. Conversely, the positive self-fulfilling prophecy can

be based on an external locus of control. This was meant to be. I/we are indeed fortunate." Once again, the roadblocks do not deter us from our decision to move forward. As was depicted so many times in old Western movies, the cavalry will show up and run off our enemy.

Hopefulness and optimism might be contained in an ideation that is journeying through our unconscious psyche. As in the case of avalanches, this positive ideation picks up psychic debris (such as old memories of joy, general feelings of contentment, and self-perceptions of competence), thus increasing the force and richness of the positive ideation. We think and feel that trust in our competence is justified. We elevate our polystatic baseline in anticipation of our success in doing something big and beautiful." A self-fulfilling prophecy might contribute to the ideation. We believe that success is at hand. We ensure that what does occur is framed as success. This might even mean that we fail at achieving our goal; but take note of what has occurred. We believe that we have learned our lesson" and can succeed the second time.

Information

One of the important and distinctive features of the system dynamics perspective that Donella Meadows embraces is the acknowledgment of both hard" and soft" elements in any system. The hard elements include physical resources (such as people, food, and construction materials) and energy sources (such as work to transform materials and electricity to run the transforming machines). The soft elements center on the shared information that influences the size, nature, and purpose of the physical resources and energy sources.

For Meadows and her colleagues, the flow in a system includes not just tangible entities but also intangible and information-based entities such as mailed letters (in the old days) and transmitted text messages and emails (in the current times). Also

flowing in any system are first-level orders to increase or decrease production or delivery of services. There might even be a second-level change in the mode through which information is transmitted and orders are given. Or there is a second-level change in the people to whom information is sent. It is these second-level changes that Meadows identifies as potential leverage points in any system. These changes are often more influential than her previous six leverage points.

Meadows is particularly interested in the recipients of information. For her, the structure of information flow particularly pertains to who does and does not have access to the information. Today, we often ask who has been invited to the table (where the information is shared and discussed). The behavioral economists (such as Kahneman) who we have frequently brought into the dialogue in this book are particularly keen on identifying who is and is not at the table. They want to know how the interpretation of information and decisions made at the table have been influenced by who is present and who speaks.

Likely the most important recipients of healthcare information are the public. Although we continue to debate whether healthcare is a right or a privilege, there is no question that the public has a keen interest in health and well-being, as we know the top searches across the world are related to health. We have seen an explosion of health-related information sources. Yet it is unclear what messages are getting through. The Public has few means of filtering out noise from necessary information to improve their own health.

Traditionally, physicians and health-focused family members were the primary source of healthcare information for most of us. If we wanted to get the best information, we asked our family and friends and then sought out our family's physician to get the best information for our health. Physicians had access to health libraries that many in the general public could not access or found

too expensive to provide them with practical insights into their health.

The primary sources of health information began to shift in our new information age, where now everyone has nearly equal access to any health information previously only available to physicians. This shift in information sources has accelerated with the broad-based use of tailored Social Media information sources such as YouTube, TikTok, Instagram, FaceBook, Influencers, Podcasters and many others. This de-professionalization of healthcare information has flooded us all with massive amounts of information that can often overwhelm and confuse us. Complexity, Ambiguity, and Turbulence emerge as the rushing river of information flows into our cell phones and desktop computers.

Some of these information sources become addictive. We "doom-scroll" through the rapids, smashing into boulders and falling over waterfalls of data on pages designed by those who are most interested in how long we look at the pages (as we noted previously in our exploration of AI in healthcare). The actual value and gain we receive from looking at these pages is of minimal interest. An overfocus on getting our attention above all else outweighs the provision of actionable intelligence about shifting toward health and well-being.

The Public is so confused that a recent survey asking them how valuable Primary Health Care is and how much they believe we invest in Primary Healthcare demonstrated they find great value in Primary Healthcare, yet most believe we spend 50% of our total healthcare dollars on Primary Healthcare and are shocked to learn we actually only spend 5% on primary healthcare—a clear 10-fold gap between what Americans perceive as a healthcare priority and what we actually spend.

That 10-fold gap can only be closed by sustained, meaningful, trustworthy, and compelling communication that can be

delivered within the rushing river of distracting information entering every phone and household. Likely, this will require some strategic re-orientation of HOW information flows through the Internet and is cultivated. Artificial Intelligence may have an opportunity here for pro-social, pro-health information flow—by assisting each of us and curating trustworthy health information in digestible doses that can facilitate our deeper understanding of our healthcare eco-system and practical ways for us to influence local healthcare policies to help improve our health, while also providing us with direct access to meaningful and empowering ways to take charge of our own health.

Along with complexity theorists such as Scott Page (Page, 2011), behavioral economists believe that intersectional perspectives offered by diversified attendance at the table increase the chance that high-quality (and creative) decisions will be made. At the polystatic level, Meadows' emphasis on information flow suggests that we should be mindful of the information we receive and use to alter our baselines, our predictions, and our actions.

Rules and Norms

While the flow of information, as a soft" variable in a system, might be ignored when considering leverage points, the rules and norms of the system might be even more frequently ignored, for they are invisible until they are violated. Returning to the peremptory ideation train, we may find that rules and norms are being carried on a train built during our youth as we were learning (often painfully) about the way" our society works. During our childhood or early adolescence, we were informally taught which formal rules (such as the golden rules" of Christianity) are to be observed and which can be ignored. We also learn about the real" rules and the powerful norms that govern the actual conduct of those who have been civilized" (socialized) in our society.

Past experiences related to shame, embarrassment, physical punishment, and retreat are seated on the train. Some social observers have pointed in particular to what we have learned from our society during our late childhood and early adolescent years. For late adolescents throughout the world who lived through the COVID-19 crisis during this critical period, their psyche might be filled with norms regarding who is to be trusted, what dangers other" people are carrying with them, and the resultant acceptance of or even preference for virtual rather than physical relationships.

This seventh mode of leverage holds great power. It is no wonder that Donella Meadows assigned this mode a high ranking. As she noted, incentives, punishments, and constraints reinforce a system s rules (and norms). We think Dr. Meadows would agree that this reinforcement can take place formally through rewards (such as salary and promotions) and constraints (such as dress codes and reporting relationships) or even more forcefully through informal punishments (such as isolation and estrangement).

Likely the best approach to resetting incentives, punishments, and constraints in the healthcare ecosystem will require something being explored by California Governor Newsom, Unified Financing. Healthcare incentives are scattered and often contradictory from one payment system to another. A single primary care physician might face 20 different, contradictory incentives across a dozen or more health plan payers for a single patient in their office. These scattered and often contradictory incentives might send signals like this: "order many labs and send immediately to the nearby Emergency Department" vs "don't order any labs or medications, and you will be fined if this patient goes to the Emergency Department" by two different health plans.

What is the physician going to do? Send him or her to the Emergency Department as he would like to do, or try to manage

things with limited testing and restrictions and prior authorizations for medications that might alleviate the need to go to the Emergency Department? Is the physician to stop in the middle of the visit and look up the nearly incomprehensible "plan description" for the patient for the next hour to try to decipher what the health plan administrators think? Does the physician call the plan and wait on hold for an hour to explore options?

In general, with a 15 minute visit time, he will improvise and do his best to explain to the patient he doesn't know if he or she will be billed for the ambulance ride to the Emergency Department and he doesn't know if the medication will be approved in a day or a month or never . . . .so the two of them haggle towards a game-plan and both leave the exchange frustrated with the lack of clarity.

Without Unified Financing (no, that is NOT single payer, it is unifying the financing through pooling from all major purchasers and payers for healthcare to align incentives, punishments, and constraints), it is nearly impossible to align financial and medical incentives in the same direction to help guide practicing physicians toward the best decisions and choices each and every time. Lack of alignment of incentives in healthcare may be the single greatest contributor to excessive costs and lack of accountability to the public.

The power of informal reinforcement resides not just in the emotional damage done by altered interpersonal relationships but also in the impermeability of this reinforcement to any alteration in most settings. This leverage point reinforces the importance of organizational processes and attitudes. As Goodwin Watson astutely observed, the operations of any institution are determined not only by structures but also by the way people relate to one another (process) and how they think and feel about the structures and the relationships (Watson and Johnson, 1972).

While the formal rules of an institution can be assigned to its structure, the informal rules and the norms of the institution determine and constrain its processes and strongly influence the attitude of those in the institution. Furthermore, taken together, the processes and attitudes of an institution provide the foundation for its overall culture. The processes also included finding ways to punish the norm-violating newcomer without getting caught." No one could formally blame you for not inviting someone to join you at lunch or at the neighborhood bar.

You have every right" to choose the people with whom you affiliate (process) aside from formal reporting relationships (structure). You also can t be required" to feel in a particular way about another person, nor can you be assigned the task" of sharing forbidden" information—let alone breaking up existing patterns of behavior. Attitudes are protected just as informal processes are immune from formal authority. Self-sealing is in full operation. Donella Meadows recognizes these protective forces. Powerful leverage is available when altering rules and norms precisely because of these counterproductive protections.

There is one final cautionary point. Along with the remaining leverage points identified by Donella Meadows, the formal and informal rules and norms (along with other elements of an organization s culture) provide the integration (glue) that holds the organization together. Real change can occur when tinkering with this integrative process and altering the processes engaged and attitudes held by those working in the organization. The tinkering and altering inevitably motivate strong, polarizing opposition and considerable turbulence.

Organization

We have arrived at Meadows' BIG FOUR points of leverage. None of these leverage points are to be found in MAHA, though in some ways, these final four are obvious choices. Meadows describes the BIG FOUR as follows:

#4. Self-Organization

#3. Goals

#2. Paradigms or Mind-Set

#1. Transcending Paradigms/Mind-Sets.

The way an institution is organized is important, as are the goals that guide the actions of those leading this institution. The two highest leverage points are also widely cited in contemporary literature on leadership and organizational functioning. The first of these two leverage points, paradigm, is cavalierly thrown out as a transformative" change to be made by any leader. Contemporary leaders are to shift paradigms" on their way to more effective leadership. Donella Meadows' highest-rated leverage point, transcendence, is even more easily tossed around in contemporary leadership literature – especially that literature that brings in the spiritual element of leadership.

We first consider the organization as a leverage point. Meadows indicates that powerful leveraging is found in one s ability (and authority) to add, change, evolve, or self-organize system structures. We find the fourth of these strategies to be particularly intriguing and important. This is the ability for leaders (actually all members) of an organization to self-organize. Coming out of literature on chaos and complex systems, the process of self-organization stands in contrast to the traditional assumption that systems must be governed by hierarchies (Waldrop,1992).

We have introduced self-organization and mentioned the flocking of birds and the swarming of fish. As we have noted, flocking and swarming are self-organizing systems. There is no lead bird or lead first. The neighborhood effect governs the ongoing, well-organized" dynamics of the flock and school. Each bird and fish moves in the direction of other nearby birds and fish. Similarly, in complex human organizations, the real" operations are governed by what one s organizational neighbor" is doing. Our

conclusions regarding the powerful role played by informal norms relate directly to this neighborhood effect. Informal norms are established and reinforced by the repeated (and rewarded) behavior of those working alongside one another in the institution.

Meadows proposes that the self-organizing processes of an organization strongly influence its operations. If this self-organizing process can be influenced (leveraged) then these operations can be changed. The challenge is to find a way in which this influence can occur. While we can offer no silver bullet with regard to healthcare organizations, we do think that an important perspective was offered by Robert Simons (2005) regarding spans" in an organization. While most span analyses focus on the span of authority (how many people are reporting a specific manager), as we noted, Simons proposes that four spans play an important role in determining the effectiveness of teams: (1) control, (2) accountability, (3) influence, and (4) support. We believe they also critically determine the specific effectiveness of each team member.

As we have noted, each of these spans can be narrowed or widened. The amount of support, for instance, can increase or decrease, depending on the informal neighborhood" assignment of this support. Similarly, one s group or team can be increasingly or decreasingly influential depending on the informal dynamics operating in the organization (and norms traveling on the peremptory train).

The level of a healthcare team s accountability, as defined by the organization, directly affects the level of pressure that drives the team s need for organizational resources. An immediate analysis suggests that self-organization is dependent on the interdependence of people and teams within an organization. This is the neighborhood effect and the peremptory train in operation. In an organizational setting, this effect is founded on the availability of support from your neighbor (person or team)

and, in return, on the support (influence) you provide them. Interdependence is achieved when Simon s span of support and span of influence are wide.

We also can engage this self-organizing mode of leveraging at an inter-organizational level. In many ways, self-organizing leveraging can be engaged by creating and maintaining infrastructure (e.g. political or governance) for implementing a combination of strategies at one or more of the highest levels (5-12) of Meadows' leverage points. For instance, Public Health strategies can represent self-organizing across current entities through the establishment of regional collaboratives or "community collectives"—as we will describe in Volume Two. These collectives are established by creating a loosely organized pooling of resources to amplify impact across the community.

Jacob Brody (2023) illustrates the use of this leveraging strategy in proposing joint ventures (JV) by healthcare systems to combat Diabetes:

> The way to improve diabetes care is to partner with health systems in a joint venture structure. By leveraging the local scale and brand of the health system, the JV can receive above-market reimbursement rates while getting instant credibility with local providers. Instead of being perennially under-resourced, a joint venture can leverage private capital to expand access to care while a referral network of hundreds-thousands of health system providers is a built-in source of low-cost patient acquisition.

Collaborative ventures, such as Brody proposes, can produce a loosely organized pooling of resources to amplify impact across the community of healthcare. Community and inter-community collectives are often sustainable, well-resourced approaches across entities. These collaborations are far superior to competing, micro-productive, often short-lived attempts to address public

health challenges. In healthcare and most other sectors of society, cooperative advantages win the day over competitive advantages (Kanter, 1994).

Goals

Systems theorists speak of the leading part of a system and of the purpose for which the system exists. The leading part, in turn, is driven by and guided by the system s goals. These goals provide a reason for the system to survive and adapt to its shifting environment. Therefore, it is understandable that goals can serve as leverage points for organizational change. We bring about change for a specific purpose. This purpose relates to the system s goals. Since leverage is itself a metaphor (suggesting a lever), we propose that goals represent the fulcrum, which is the point around which a lever pivots. It acts as the support or balance point, allowing a lever to move or lift an object more easily.

More generally, fulcrum" refers to something central or essential that supports or brings about action or change in a situation. We would call the fulcrum an activating" goal that provides not only purpose and direction but also support and energy. Furthermore, the fulcrum as an activating goal enables us to establish what is essential. The fulcrum also leads us to that which is the essence of the system in which it operates.

In beginning to address the role played by goals as points of leverage, we not only introduce the metaphor of fulcrum. We also reintroduce the concepts of Polystasis and baselines. These concepts lead us to the conclusion that we must be agile when using goals as leverage. T.O.T.E. must be kept in mind when using a goal as the fulcrum for leveraging our system. Our baseline and psychosocial template will shift as our environment shifts and as we learn more about how this environment reacts to our actions. The fulcrum itself will have to be moved, leaving us with no option but to adjust the lever (action) that pivots on the fulcrum. Polystasis is in full force.

We can return to another metaphor in describing the agile role to be played by goals and leverage points. A surface anchor serves as a fulcrum for a ship that has left the harbor. Acting as a goal, the surface anchor keeps our boat headed into the wind and slow-moving. Operating as surface anchors, organizational goals provide stability and continuity. If the organization's goals are clearly articulated, and if the organization's leaders reduce any tendencies toward expedience, then the organization will not veer very far from its stated purpose

Yet our ship will move, especially if the wind and/or the tide are strong. Given strong winds and tidal forces associated with VUCA-Plus, the vessel must be able to do some moving. Furthermore, the surface anchor is pulled back into the boat when the journey commences once again. At this point, the goals associated with the ship s journey are more likely to be guided by a compass and/or navigation chart. The fulcrum becomes the ship s rudder as controlled by the ship s captain.

Yet another metaphor can be introduced to add further complexity to leveraging a goal. This metaphor concerns placing goals (as darts or arrows) on a target. More than one dart or arrow is thrown or shot at the target. The target metaphor encourages us to consider a set of goals, rather than a single goal. Most contemporary organizations have multiple goals. Their leaders must be guided by the demands of those who serve as guardians (stakeholders) of these goals.

Looking toward the Ship of Healthcare, a fundamental shift in goals might be described as shifting from an illness-focused healthcare delivery system toward a health and wellness-focused healthcare eco-system that incorporates principles of health and wellness across the many domains that influence health—such as the Farm Bill, Food production and ultra-processing, School Lunch Programs, Public Health initiatives, healthcare access (Social media resources, Telehealth and brick-and-mortar care models).

The recent NASEM report ("Valuing America's Health") strongly recommends that "Health Impact Assessments" be introduced across many domains (National Academy of Medicine, 2024). These assessments should be introduced in ways similar to "Environmental Impact Assessments," yet in more streamlined and user-friendly ways to recognize often costly and negative health impacts of things like Farm Bill-related food production. Putting a new directional "Health Impact Assessment" rudder on the Ship of Healthcare would begin to move us in the direction of prioritizing health and well-being through the enormous budgetary powers of our states, national governments, and business entities.

If we must take many goals into account, then the distinction drawn by Daniel Kahneman and his colleagues (Kahneman, Sibony, and Sunstein, 2021) between Noice and Bias must be considered. If the arrows or darts land at widely diverse places on the target, then the target can be considered noisy." High levels of Noise suggest that multiple divergent goals must be considered. If the darts or arrows land in the same area on the target, then the configuration of darts or arrows on the target holds the potential of being Biased." Strong Bias indicates that the convergence of goals might be based on false assumptions or a distorted perception of the world in which action is to be taken.

We must be wary of Bias If we use a goal as a fulcrum for leveraging change. Furthermore, goal-leveraging requires that we find an effective way to deal with the potential diversity of Noise. Consideration must also be given to the condition of goals located on opposite sides of the target. These goals often represent the polarities that reside in one s organization. Activating goals often reside in a polarity.

We take action to reach a particular goal because we have made a hard choice in selecting this goal rather than another one. We make commitments while living and working in a world of healthcare that is saturated with VUCA-Plus. Our game of darts

is exciting to play because multiple darts are thrown and often land on many parts of the target! We are energized by the challenge of making a difficult decision and are gratified by achieving this goal. Then on to another goal! We can leverage multiple levers (program initiatives) with multiple goal-based fulcrums.

Paradigm

We have now arrived at Donella Meadows favorite landing place: the fundamental frame of mind engaged when examining and seeking to change a system. While Jay Forrester set the stage for this landing spot, Dr. Meadows has provided the most commentary and exhortation concerning the profound challenge of shifting one s fundamental frame. While many authors are cavalier in their use of the term Paradigm", Donella Meadows is fully justified in proposing that a shift in one s way of looking at systems is paradigmatic in scope and importance.

Paradigm-Based Leverage

We begin with Donella Meadows conception when exploring and expanding on her consideration of paradigm-based leverage. Meadows proposed that one can leverage the mindset or paradigm from which arise a system s goals, structure, rules, delays, and parameters. From this statement, one can deduce that Meadows is scooping up the other high-leverage points and incorporating them all in her concept of mindset and paradigm.

Donella Meadows follows in the footsteps of Thomas Kuhn (2012), the scientific historian who first presented this concept. Like Kuhn, Meadows incorporates a variety of perspectives and practices in her paradigm presentation. Kuhn defines a paradigm in multiple ways. He is often criticized for not being clear or at least consistent in using this term. The best way to think about Kuhn s paradigm may be to consider it a description of an epistemological community encompassing a wide range of

perspectives and practices concerning the relativity of knowledge. We can similarly approach Meadows' paradigm as a community encompassing wide-ranging, system-based perspectives and practices.

Given the other leverage points that Meadows incorporates in Paradigm, we would note that Paradigms provide the framework for determining acceptable and unacceptable goals. A dominant contemporary paradigm concerning the static objectivist s equation of verified reality with quantification requires that a goal be measurable. If not measurable, then it is tossed aside as a hope or dream. Similarly, Paradigms determine what is and is not a viable structure. This determination is based in part on the dominant paradigmatic focus during our century on short-term durations.

We want structures to exist for the next five years (or ten minutes!). Little planning is done regarding the long-term survival of structures (or the institutions they support). We could also point to dominant paradigms in our society that determine which rules are to be followed (formal) and which are to be ignored or made optional (informal). Other paradigms determine in what cultural settings delays are acceptable (mañana) and not acceptable (now or never"), and which parameters are most important (such as taxes) and which are least important (such as standards).

Theory of Mind

Typically, somewhere in our middle to late childhood, we abandon our primary narcissism (viewing the world exclusively from our own perspective) and come to a profound recognition that other people with whom we interact hold their own independent and unique perspectives on life. With a theory of mind in place, we come to appreciate that other people operate from their own mental state. We also come to better understand the thoughts, beliefs, desires, and emotions of other people, which

allows us to accurately predict how they will feel, act, and think in a given situation.

We acquire our theory in part from other influential people we have encountered who hold their own biases and history of human interactions. Frequently, our theory is self-fulfilling and self-sealing when based on the often inaccurate or outmoded theories of our parents and broader society. Everyone around us holds a similar theory. Our espousal and enactment of the theory (Argyris and Schon, 1974) is encouraged and rewarded by these other people. Virtually all of the leverage strategies identified by Donella Meadows are engaged within interpersonal contexts. As a result, one s theory of mind undoubtedly plays an important role in the content and character of Meadows' fourteen leverage points.

The determinative role played by one s theory of mind is obvious in the interaction-based leverage provided by rules and norms, organizational structures, and goal setting. This role might be less obvious, but probably just as influential in points of leverage concerning the flow of information, the moderation and acceleration of change, and even the formation and reinforcement of paradigms. It is important to acknowledge that the one common feature of Paradigm that emerged from Thomas Kuhn s initial description was the theme of Community (Kuhn, 1962).

Shared perspectives and practices (normal science") evolve from sustained interactions among scientists in a particular field (who are often housed in prestigious, mainstream" institutions). The existing dominant Paradigm is held and reinforced by these high-prestige practitioners (who become the traditionalists"). Conversely, the revolutionaries tend to come from marginal" institutions or are themselves marginalized" (as a woman, racial or ethnic minority, etc.). These marginalists" are isolated from the mainstream traditionalists. In their alternative approach to solving seemingly intractable anomalies," they form their own

paradigmatic communities and eventually become the traditionalists.

Given this interweaving of theory of mind with paradigmatic revolutions, we would suggest that the most important of Donella Meadows' leverage points is not just confronting and changing paradigms but also confronting the interpersonal and societal barriers that isolate a dominant paradigmatic community from alternative communities in which diverse perspectives and practices are being engaged. When any system opens its boundaries, the prospects of change and creativity increase. There is also the possibility that the system will destabilize and fail to survive when the fresh air becomes a destructive hurricane.

We propose that the possibility of destructive openness is diminished if consideration is given to all fourteen of the leverage points introduced by Dr. Meadows as they are contained within specific paradigms. When we consider the multiple interacting paradigmatic elements operating in a complex, dynamic system, we likely anticipate and effectively address the emerging challenges. We can navigate the whitewater and contradictions inherent in these systems. We would add one additional ingredient to the successful leveraging of a paradigm. This ingredient concerns the level of reasoning being engaged in planning for and using this leverage.

Fifth-Order Consciousness

Robert Kegan (1994) offers a five-level model of consciousness (way of knowing") in conjunction with his introduction of postmodernism as a major cognitive and emotional challenge in contemporary life. While first and second level consciousness have to do with the basic developmental stages originally described by Jean Piaget (movement from a sense that self is everything to a sense of an externally viewed concrete world), the third level concerns a sense of interpersonal relationships and one s membership in society (first appearance of one's theory of

mind). At the fourth level, one finds the primary way mature adults deal with the modern world. Multiple realities are acknowledged, and one can find one's own voice (self-authorship) in this world of diverse options. Rather than adhering to a traditional role, one can help to create a role for themselves.

All of this makes sense when seeking to "fit in" to the mid-21st-century world. There is a prevalence of first-order adjustments and effective use of convenient heuristics at this level of consciousness. As already noted, Bradley and Taylor referenced this existing, first-level paradigm when considering accountability in our health care system. Rosenthal (2018, p. 8) has similarly identified a simplistic mindset. She has attributed at least some of the "sickness" in contemporary American health care to this set of economic rules—or first-order paradigmatic assumptions—that govern the dysfunctional medical marketplace:

1. More treatment is always better. Default to the most expensive option.
2. A lifetime of treatment is preferable to a cure.
3. Amenities and marketing matter more than good care.
4. As technologies age, prices can rise rather than fall.
5. There is no free choice. Patients are stuck. And they're stuck buying American.
6. More competitors vying for business doesn't mean better prices; it can drive prices up, not down.
7. Economies of scale don't translate to lower prices. With their market power, big providers can simply demand more.
8. There is no such thing as a fixed price for a procedure or test. And the uninsured pay the highest prices of all.
9. There are no standards for billing. There's money to be made in billing for anything and everything.

10. Prices will rise to whatever the market will bear.

To move beyond these dysfunctional "rules," another level of consciousness is required. This level is required if one is to engage any of Donella Meadows' leverage points (especially paradigm shifts). As Kegan notes, a second level of reasoning is required. He refers specifically to Gregory Bateson s learning that reflects on itself (Kegan, 1994, p. 232). This level is founded on a relativistic perspective (no objective reality or eternal truths).

Given this perspective, the stage is set for reflecting on existing paradigms and being open to or even helping to create alternative paradigms (as Meadows suggests). This fifth level is also founded on the construction of new narratives (and ultimately new paradigms) within relationships (and within the communities Thomas Kuhn identified as residing at the core of any new scientific revolution—or we (along with many others) would suggest at the core of any epistemological (way of knowing) revolution. More specifically, the fifth level of consciousness resides in dialogical relationships where reality is being examined and recreated through mutual construction. One might even go so far as to suggest, as Leslie Brothers (2001) does, that reality is ONLY created in and ONLY exists in relationships.

Meaning In Relationships

Robert Kegan (1994, pp. 262-263) focuses specifically on the nature of meaning. He begins by throwing out the origin of meaning residing in an individual s mind. Rather, it exists in relationships:

> . . . the traditional view that meaning originates within the individual mind, is expressed with words (and other actions), and is deciphered with the minds of other agents is deeply problematic. . . . There is an alternative way of approaching the problem of . . . meaning. . . We may begin our analysis at the level of the human relationship as it generates both language and understanding. . . . Society is, in effect, held together through common participation

> in a system of signification. . . . [I]t is not the individual who preexists the relationship and initiates the process of communication, but the conventions of relationship that enable understanding to be achieved.

Kegan (1994, p. 264) proceeds to expand on the process of communication as it leads to the creation of meaning:

> An individual s utterance in themselves possess no meaning. . . . In the relational case . . . there is no proper beginning, no ordinary source, no specific region in which meaning takes wing, for we are always already in a relational standing with others and the world. . . . Lone utterances begin to acquire meaning when ana other or others coordinate themselves to the utterance, that is, when they add some form of supplementary actions (where linguistic or otherwise). . . .

The fundamental interpersonal proposition is now presented by Kegan (1994, pp. 264-265):

> We thus find that an individual alone can never mean"; an other is required to supplement the action and thus give it a function within the relationships. To communicate is thus to be granted the privilege of meaning by others. If others do not treat one s utterances as communication, if they fail to coordinate themselves around the offering, such utterances are reduced to nonsense. In this regard, virtually any form of utterance may be granted the privilege of being meaningful or, conversely, serve as a candidate for nonsense.

In adding Kegan s perspective to our reflections on the leveraging of change, we discover that this leveraging must always be done within a relationship and in a community. Otherwise, the proposed parameter, rule, goal, or paradigm will be deemed nonsense." As Thomas Kuhn noted, the perspectives and practices of scientific revolutionaries were considered

nonsensical" until these outliers demonstrated that they offered a viable answer to some elusive anomaly. As a relativistic and relational "way of knowing," Fifth-level consciousness is required to bring about successful leverage of change. Without relationships and community, leveraging becomes foolish" and void of all meaning."

Shifting the entire lens of healthcare from "illness management" to "population health" is the work of generations that has begun; however, this shift is far from completed. We often call for paradigm shifts long before we have any idea how to actualize them. This early overuse can diminish the importance of true shifts in mindset. When we hear a leader call for "paradigm shift" or "transformation", we must first ask him or her, "How have you been changed by your realization that we must make such a huge shift in how we view our work together?" It has been our experience that system paradigm shifts follow individual paradigm shifts. We (and our leaders) must first change ourselves. The system will change as a result of our change.

Otherwise, we are simply asking other people to change while we stay the same. It is human nature for all of us to do this. What married couple has not spent years trying to get the other partner to change how they do something? When we project paradigmatic change onto others, we actually inhibit it from occurring. This kind of internal work is complex and challenging. It goes beyond the scope of this Afterward. Yet this is likely why true paradigmatic shifts are rare in healthcare and elsewhere.

Shifting from an individual-focused healthcare lens to a population-focused healthcare lens will eventually have profound, unanticipated positive and negative impacts that are difficult to predict and thus full of uncertainty. The first barrier we confront is the age-old accusation of "socialized medicine," which has broken many healthcare reform attempts in the United States for decades. We find one version of accusation in Saphier's perspective on MAHA. We must fully understand the resistive

cultural mantra offered by Saphier and many conservative critics of contemporary healthcare to eventually overcome it.

Pro-Social, Pro-Health, Pro-Well-being campaigns portrayed by Crandall, by their very nature, will require systems-level, community-level, state-level, and even federal-level paradigmatic shifts that will undoubtedly confront major obstacles and opposition. Paradigms cannot and will not shift and change overnight or with a single bill or law. They only shift when the risk of staying in one paradigm far outweighs the risks of moving to a new one—and we have strong and courageous leaders willing to risk their lives and careers to lead us there.

At the heart of the matter is the selection of an appropriate lens when seeking to leverage change by shifting a paradigm. As noted, paradigms embody the fundamental way that we see the world. This includes our perspective on interpersonal relationships and community, methods to find what is real, and outcomes we consider most valued in our world. So, we must pick carefully and wisely from the many ways to engage a paradigm. Often this means moving to Donella Meadows final leverage point: transcendence.

Transcendence

As Donella Meadows has proposed, the final and ultimately most important leverage point concerns the power to transcend paradigms. We are faced with the profound cognitive (and emotional) challenge of looking down on the way we look down on our thoughts, feelings, and actions. We are invited to reflect on our reflections and question our way of questioning. We pause for a moment to reflect on Meadows concept of leveraging. Is her perspective subject to review and reflection?

After all, leveraging is based on a metaphor regarding fulcrums and levers. As with all metaphors we engage as models, the assumptions, perspectives, and practices that come with this

metaphor can (and should) be examined. For instance, levers and fulcrums are physical objects, and leveraging is mechanical. Our efforts to leverage change in our lives or the organization we lead are not mechanical acts. The outcomes we hope to achieve rarely have anything directly to do with physical objects.

We expand on the nature of this final leverage point. Ultimately, transcendence takes us out of the profane" (secular) world identified by Mircea Eliade (1959) to a sacred world. The sacred world is one in which a higher order takes precedence. There is a more important purpose to be discerned and honored. It should also be noted that we are likely to bump into one or more mysteries when we seek to leverage via transcendence.

Our inquiries into that which is most important and of the greatest good will lead us to purposes that come to us from a source over which we have no control. Our environment, our wish for species survival, or some divine entity might decree the desired outcomes. Our transcendent leveraging might, as a result, focus not on what we can change (internal locus of control), but rather on what we can t change (external locus of control). We must adjust to and perhaps more fully appreciate the dictates coming from a wiser (and hopefully benevolent) source.

Many challenges face us in using this final leverage point. In considering these challenges, we turn to the wisdom offered by someone who helps us navigate a turbulent river. It is Peter Vaill (1996) who joins a secular narrative about living and leading in a white-water environment with a spiritual narrative about leading and learning in this environment. Vaill (1996, p. 178) offers the following insight: More and more, as white water increased, leadership consists precisely in leading in the creation of new meanings, new grounds and reasons for the organization to be doing what it is doing, new understanding of the torrents of change that inundate us." In this statement, we find not only a transcendent elevation of one s search for meaning and one s appreciation of the turbulent VUCA-Plus world but also a

transcendent acknowledgment of the higher-order purpose (reason") that can (and should) guide our individual and collective actions.

In his reflections on spirituality, Vaill reinforces the assumption that sacred matters typically reside outside one s immediate control (internal locus of control). They bring us to acknowledge and appreciate external forces and sources of meaning (an external locus of control): Spirituality is a decision to search beyond what one can do to or on or within oneself. Spirituality perceives the inadequacy to lie fundamentally not in material props but in the self that would do the propping. Thus, to be spiritual is to turn away from material props and to open oneself to a transcendent source of meaning" (Vaill, 1996, p. 179).

Vaill focuses on what he calls spiritual learning." The wisdom offered by Paul Tillich can once again be brought into this conversation. Vaill turns to Tillich s *Courage to Be* (Tillich, 1952/2000) as a guide for acknowledging, appreciating, and fully using (leveraging) what we are given": a world filled with what we have identified as VUCA-Plus. It is in our courageous participation in this multi-challenged world that we find meaning and affirmation. Vaill (1996, p. 183) builds on Tillich s courage to be":

> If Tillich is right, permanent white water is a blessing! It is our opportunity to rise above complacency and naivete, to confront the deeper dilemmas of our existence, to be tempted by cynicism and negativity and despair, but to see finally the truth that lies beneath our frustration: "The act of accepting meaninglessness is in itself a meaningful act. It is an act of faith."

However, according to Tillich, "man is not necessarily aware of this source," or of the connection to being-itself. Perhaps the gradual forming and deepening of this awareness, of this connection to the ground of being, to the spirit, is the learning that

permanent white water affords. The question is, what might that learning process look like?

The core argument is that the learning process should have the seven qualities of learning as a way of being. It should be self-directed and creative, be variously expressive and certainly involve a powerful feeling of meaning, occur on-line in the many walks of one's life and continually throughout one's life, and definitely provoke reflexive learning. In the present context, that reflexive learning is about spiritual development itself.

Vaill (1996, p. 183) offers his own perspectives on spiritual learning and learning as a way of being:

> But what is the content of spiritual learning as a way of being? In considering systems thinking, leaderly thinking, and cultural unlearning, we are not moved to ask as we are so often with spiritual learning, "But what is it?" Tillich, I believe, would say that spiritual learning as a way of being is learning of the ways that our courageous daily struggles in white water connect us to the ground of being and ensure our participation in it. But is it possible to be more concrete than this?

At this point, Vaill (1996, pp. 183-194) does become more concreate, speaking to a sense of one s feeling" of the spirit" as this feeling relates to a holistic" sense of spirituality:

> When we say we genuinely "feel the spirit" in or of some entity, what are we saying? We are making a statement about a presence or current of energy or palpable intensity in the entity that goes beyond its existence and normal operation. We are not describing a force from outside but rather an intrinsic characteristic that has become manifest to us. We are not saying that the entity's "normal" reality and operation has no meaning but instead that we are seeing its normal meaning as

> profoundly enhanced, enriched, strengthened, and intensified by this spirit that we feel.

Vaill (1996, p. 194 is making an important point here regarding the presence of spirituality in our everyday life. Eliade s sacred space and secular space intermingle not only in primitive animistic-oriented tribes but also in our contemporary world:

> We know we can have this experience of spirit inhering in all kinds of entities: in families; in sports teams; in institutions like schools, hospitals, armies, and corporations; in processes (when we speak of the spirit of inquiry, of the law, or of creativity, for example); in works of art and artistic processes; in individual persons (when we see deeply into the meaning of someone's life, for example); in the bonds of loyalty and love between individuals; and in nature, both as concrete systems and events and as abstract laws and relationships. In short, as humans we are capable of seeing and feeling the spirit in virtually anything.

With the presence of spirit in our daily life comes the opportunity to identify that which is of ultimate importance (Vaill, 1996, p. 183):

> When we have these clear perceptions of the spirit "in" people and things, I believe we are seeing them in their essence. We are experiencing holistic perception. We are grasping all at once the details of their operations, their histories, their effects, their human significance. We are seeing them whole. Our learning about them has moved our awareness beyond their component parts and beyond their problems and instabilities. We are experiencing the beauty and the goodness running all through them, inhering in their essence. We are letting ourselves feel wonder, awe, and astonishment. The effect on us is frequently physical: we tear up and speak chokingly, we

> have to get up and move, we suck our breath in and tremble.

If Vaill is correct, it is in the holistic moments of beauty and goodness that we can move upward" (transcend) and reflect down" on the life we are leading. We can be grateful in being given the challenging opportunity to live in and transform the conditions of a VUCA-Plus world.

We will likely struggle to find authentic examples of transcendence in the American Healthcare eco-system. If paradigm shifts are rare and new gems, then Transcendence is a unicorn of personal, inter-personal, team, community, state, and national awakening that may occur like a 100-year flood, if we are lucky in our lifetime. Its importance, its power, and its capacity to drive us into newer and better ways of health and well-being are massive and long-lasting. Yet resistance, obstacles, and unintended consequences are often impossible to predict, making transcendence the rarest of human undertakings. It requires a combination of faith, science, motivation, and inspiration to which we must all aspire—and a modicum of patience and hope along the way.

Conclusions

In bringing a close to this book, we wish to introduce the life and work of an extraordinary spiritual leader, Brugh Joy, who has conducted many workshops on consciousness and transcendence and written about his own spiritual journey. Much as Peter Vaill suggested in his description of spiritual learning, Joy (1979, p. 7) promotes the expansion of (and intense appreciation for) the reality existing outside us and inside us:

> Transformation enlarges the context of reality. The awareness is lifted up into states of consciousness where the multidimensional nature of existence is perceived, not just conceived; where it is experienced, not just imagined;

> where each dogma and each absolute truth is seen as but a single facet of a superconscious whole called Beingness. In the totality of Beingness there is no absolute anything—no rights or wrongs, no higher or lower aspects—only the infinite interaction of forces, subtle and gross, that have meaning only in relationship to one another. Absolutes are concoctions of our rational minds. Reality must never be confused with concoctions. The Transformational Process, the release from fixed beliefs, allows the fragmented awareness to meld into universality.

We find the essence of Meadows' transcendent leveraging in this breathtaking challenge to our usual way of seeing and being in reality. The other leveraging challenges—ranging from parameters and delays to goals and paradigms—all merge into Brugh Joy s transformation process. Perhaps, as Joy (Joy, 1979, p. 20) suggests, it is a matter of abandoning our grown-up" sense of reality (normal science") and returning to a fresh, pre-socialized (pre-paradigmatic) sense of wonderment about reality:

> . . . as we begin to use the beginner's mind to see things the way they are rather than the way we have been conditioned to see them, we can also begin to understand . . . fundamentally, our all-too-human habit of taking our belief systems as real. . . . [W]e can also learn to see the magnificence of our creative potential in the rich variations of themes called life, religion, government and so on.

At this point, Brush Joy brings us back to the fundamental distinction we offered earlier in this book between an objectivist and constructivist perspective on reality." Joy (Joy, 1979, p. 2) opts for a constructivist perspective:

> The difference between the awful insanity and the creative glory is nothing more than the recognition that

> belief systems are only belief systems and not realities. At this level of consciousness, we can create anything we desire, and once we realize that we live only in an idea level of existence that is not based on any intrinsic realness, we may consider the possibility that there are options to our experience and expression of reality. The questioning process brings us naturally, easily and inevitably to the threshold of higher states of consciousness.

Meadow s leveraging of transcendence is fully evident in Joy s proposal that we engage a beginner s mind" when discerning what is actually real." We should not only re-enter our world without a pre-existing frame of mind (paradigm) but also with a focus on that which is particularly important for us. We are living in a VUCA-Plus world that requires us to focus on our ultimate concern." (Tillich,1957/2009) We are to transform the VUCA-Plus conditions on behalf of this concern. Transcendence is not for the faint of Heart" and must be used to leverage only those changes in perspective and practice at the essence of our Beingness."

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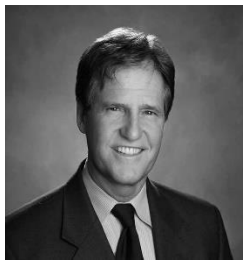
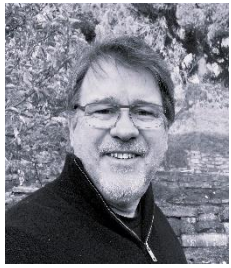


Walt Mills, M.D., was the founding Program Director at the Morehouse School of Medicine Dominican Hospital Family Medicine Residency Program in Santa Cruz, CA from 2022 to 2025. He has been Program Director and DIO at several other institutions, as well as President and CEO of a medical group, an FQHC CMO, and Medical Director as a certified physician executive. He was President of the California Academy of Family Physicians (2019-2020), President of the Sonoma County Medical Association (2012-2013), and selected for the CAFP Heroic Leadership Award and nominated twice as CAFP Family Physician of the Year. He received a Masters in Medical Management from USC, is a Certified Physician Executive, and a Fellow of the American College of Physician Executives. He is certified in Geriatrics and Integrative and Holistic Medicine, with training in Ayurveda.

Perry Pugno, M.D., entered the sphere of graduate medical education as a residency director for more than 20 years following a tour of duty with the National Health Service Corps. He has worked in training programs from California to Connecticut and has experience as the director of a trauma center, hospital chief medical officer, county public health officer, and medical director of a regional health plan. Perry was

the founding chair of the National Institute for Program Director Development. Dr. Pugno served as the Vice-President for Graduate Medical Education and Medical Affairs with Catholic Healthcare West, and as the Vice President for Education for the American Academy of Family Physicians (AAFP) for 15 years. He has authored more than 100 peer-reviewed publications in clinical medicine, education, and medical ethics.

Mark Vukalcic, M.D., is a retired physician, having served as a Family Practice doctor, as well as in the fields of Anesthesiology and Oncology. In his residency in Anesthesiology at UC Davis, Mark was known for actually taking on the difficult cases, talking to the patients and their families both pre and post op, and at times explaining the surgery "better" than did the surgeon. Assuming his family practice in Martinez, California, Dr. Vukalcic immediately took on teaching the FP residents on their anesthesia rotation how to optimize their patients preoperatively and offered some simple predictors of who could successfully tolerate procedures. After 20 years of practice. Mark experienced burnout, took a 50% pay cut to become an apprentice in Oncology, and served a medical mission in Honduras, "retiring" at age 70. Other than songwriting and playing mandolin in a bluegrass band, Mark volunteers weekly for Meals on Wheels.



Jack Westfall, M.D., started the High Plains Research Network after joining the faculty at the University of Colorado Department of Family Medicine. This practice-based research network focuses on communities in rural and frontier Colorado. After retiring from the University of Colorado School of Medicine, he served as the Director of the Robert Graham Center for policy research in primary care and family medicine in Washington DC. As Vice President for Medical Affairs at the DARTNet Institute, Dr. Westfall collaborates with a team of experts in primary care practice-based research and implementation. Based on community and practice interest, diabetes, weight management, and preventive health are major topics for his work. Jack practices family medicine part-time in his hometown of Yuma, Colorado.

Salus Forum Guests

Craig McEwen is the Daniel B. Fayerweather Professor of Political Economy and Sociology Emeritus at Bowdoin College. Craig specializes in the sociology of law and criminology. His research focuses on mediation and dispute resolution, courts and their operation, the legal profession, and the nature and consequences of imprisonment for adults and juveniles.

Scott Sandland has provided clinical hypnotherapy services for more than 20 years, is an internationally recognized expert in subliminal motivation strategies, and is widely published. Scott is co-founder and CEO of Cyrano.ai, a natural language understanding system empowering AI with soft-skills related to active listening techniques.

Jeffrey Smith has the unique distinction of having served as a doctor, a lawyer, an elected official, and an executive manager. Jeff is a member of the California State Bar and is certified by the American Board of Family Medicine. Jeff served as Chief Medical Officer and County Supervisor in Contra Costa County and Santa Clara County, California.

Peter Sterling is an American anatomist, physiologist, neuroscientist, and Professor of Neuroscience at the University of Pennsylvania School of Medicine. He is the author of *What Is Health? Allostasis and the Evolution of Human Design*, and with Simon Laughlin, is author of *Principles of Neural Design*.

References

Anda, Robert F, Laura E. Porter, and David W. Brown, Inside the Adverse Childhood Experience Score: Strengths, Limitations, and Misapplications Am J Prev Med 2020;59(2):293−295

Argyris, Chris (2001) "Good communication that blocks learning," Harvard Business Review on Organizational Learning, Boston: Harvard Business School Press, pp. 87-109.

Argyris, Chris and Donald Schön (1974) Theory in Practice. San Francisco: Jossey-Bass.

Argyris, Chris and Donald Schön (1978) Organizational Learning. Reading, MA: Addison-Wesley

Arima, Yoshiko (2021) Psychology of Group and Collective Intelligence, New York: Springer.

Bandini, Fabrizio, Stefano Guidi, Silvia Blaszczyk, Antonietta Fumarulo, Michela Pierini, Paolo Pratesi, Stefano Spolveri, Margherita Padeletti, Pasquale Petrone, Paolo Zoppi, Giancarlo Landini, Eval Clin Pract. 2018 Feb;24(1):285-292. doi: 10.1111/jep.12875. Epub 2018 Jan 10

Barrett, Deirdre (2001) The Committee of Sleep, New York: Crown Publications.

Bateson, Gregory. (2000) Steps to an Ecology of Mind. Chicago: University of Chicago Press.

Bellah, Robert and Associates (1985) Habits of the Heart. Berkeley: University of California Press.

Bergquist, William (1993) The Postmodern Organization, San Francisco: Jossey-Bass.

Bergquist, William (2003) Creating the Appreciative Organization. Harpswell, Maine: Pacific Sounds Press.

Bergquist, William (2011) The Courageous Leader in a Premodern Organizational Context, Library of Professional Coaching, Link: https://libraryofprofessionalcoaching.com/concepts/the-courageous-leader-in-a-premodern-organizational-context/

Bergquist, William (2014) Soliciting the pre-mortem and riding the change curve: coaching tools, strategies and concepts for effective planning. Library of Professional Coaching. Link: https://libraryofprofessionalcoaching.com/tools/coaching-questions/soliciting-the-pre-mortem-and-riding-the-change-curve-coaching-tools-strategies-and-concepts-for-effective-planning/

Bergquist, William (2025) The New (Ab)Normal. Harpswell, Maine: Atlantic Soundings Press.

Bergquist, William (2026) Dancing Between the Raindrops, Harpswell, Maine: Atlantic Soundings Press.

Bergquist, William and Agnes Mura (2005) Ten Themes and Variations for Postmodern Leaders and Their Coaches. Sacramento CA: Pacific Soundings Press.

Bergquist, William and Gary Quehl (2019a) Caring Deeply: Engaging the Four Roles of Life-Fulfilling Generativity, Harpswell, Maine: The Professional Psychology Press.

Bergquist, William (2019b), Pathways to Sleep I: An Introduction, Library of Professional Psychology, Link: Pathways to Sleep I: An Introduction | Library of Professional Psychology

Bergquist, William, Jeannine Sandstrom and Agnes Mura (2024) The Ark of Leadership. Harpswell, Maine: Atlantic Soundings Press.

Bergquist, William, Suzan Guest and Terrance Rooney (2002), Who is Wounding the Healers. Sacramento, CA: Pacific Soundings Press.

Bircher, Johannes and Eckhard Hahn (2016) Will the Meikirch Model, a New Framework for Health, Induce a Paradigm Shift in Healthcare? PMID: 28405531

Bolton, Kristy and Associates (2022) The Public Health 12 framework: interpreting the 'Meadows 12 places to act in a system' for use in public health, Archives of Public Health. Link: https://doi.org/10.1186/s13690-022-00835-0

Bradley, Elizabeth and Lauren Taylor (2013) The American Healthcare Paradox, New York: PublicAffairs.

Braithwaite, Jeffrey, Louise A. Ellis, Kate Churruca, Janet C. Long, Peter Hibbert, and Robyn Clay-Williams. (2021) Complexity Science as a Frame for Understanding the Management and Delivery of High Quality and Safer Care. Link: https://www.ncbi.nlm.nih.gov/books/NBK585611/#ch27.Sec5

Branzetti et al (2023) Coaching for Clinician Educators. J Grad Med Educ. 2023 Apr; 15(2): 261–262. Published online 2023 Apr 17. doi: 10.4300/JGME-D-23-00071.1 : Brookfield, Stephen D. (Autumn 1998). "Critically reflective practice" (PDF). Journal of Continuing Education in the Health Professions. 18 (4): 197–205. doi:10.1002/chp.1340180402. Archived from the original (PDF) on 2015-04-02.

Brody, Jacob (2023) Give Me Some Sugar — How Health System Joint Ventures Can Make Diabetes Care Sustainable. Link:https://medium.com/helpful-thoughts/give-me-some-sugar-how-health-system-joint-ventures-can-make-diabetes-care-sustainable-e997aef7d8f3brody

Brothers, Leslie (2001) Mistaken Identity. Albany, NY: State University of New York.

Cassatly, Michael and William Bergquist (2011) The Broken Covenant in US Healthcare, Journal of Medical Practice Management. Vol 27 (3), pp. 136-139.

Clutterback, David, Marita Fridjhon, Jennifer Briton, Ruth Wagament, Peter Hawkins and Phil Sandhal (2016): The Team Coaching Zone Podcast Episode #067; The Past, Present and Future of Team Coaching https://teamcoachingzone.com/past_present_future_team_coaching

Cooperrider, D. and Dianna Whitney (2005) Appreciative Inquiry: A Positive Revolution in Change. San Francisco, CA: Berrett-Koehler.

Christian, David (2019) Origin Story: A Big History of Everything, Boston: Little Brown Spark.

Crandall, Chauncey (2025) MAHA: Make America Healthy Again: A Blueprint for a Thriving Nation, New York: Humanix Books.

Csikszentmihalyi, Mihalyi (1990), Flow. New York: HarperCollins.

Crum, Alia, WR Corbin, KD Brownell, P Salovey (2014) Mind over milkshakes: mindsets, not just nutrients, determine ghrelin response. Health Psychol. 2011 Jul;30(4):424-9; discussion 430-1. doi: 10.1037/a0023467. PMID: 21574706. Link: (https://mbl.stanford.edu/sites/g/files/sbiybj26571/files/media/file/2014_mindful_stress_chpt_crumlyddy_handbook_of_mindfulness.pdf).

Damasio, Antonio (2005) Descartes' Error: Emotion, Reason, and the Human Brain. New York: Penguin.

Dennebis, D. (2023) The State of Performance Enablement, Global HR Report, Better Works, Link: https://www.betterworks.com/state-of-enablement-report-2023-digital/

de Tocqueville, Alexis (1835/2000) Democracy in America, New York: Bantom.

Duffy, John (1993). From Humors to Medical Science: A History of American Medicine (2nd Edition). Urbana: University of Illinois Press, 1993

Edmonson, Amy (2018) The Fearless Organization. New York: Wiley.

Eliade, Mircea (1959) The Sacred and Profane. New York: Harper.

Emerald, David & Zazonc, Donna (2013) The Power of TED (The Empowerment Dynamic). https://cbodn.wildapricot.org/Resources/Documents/2013%20Conference/Power%20of%20TED%20Summary%20Two%20Sided%202013_Tso.pdf

Ferrazzi, Keith.: 6 Ways to Turn Managers into Coaches (2015) Harvard Review. https://hbr.org/2015/08/6-ways-to-turn-managers-into-coaches-again

Friedman, Thomas (2007) The World is Flat 3.0 (3rd Ed.) New York: Picador.

Gawande, Atul (2017) Being Mortal. New York: Picador.

Gergen, Kenneth and Mary Gergen (2004) Social Construction: Entering the Dialogue. Chagrin Falls, Ohio: Taos Institute Publications.

Gilbert, Nigel (2008) Agent-Based Models. Los Angeles: Sage Publications.

Gilstrap, Donald (2005) Strange attractors and human interaction: Leading complex organizations through the use of metaphors. -- Complicity: An International Journal of Complexity and Education;v.2 no.1: pp. 55-70 https://journals.library.ualberta.ca/complicity/index.php/complicity/article/view/8727/7047

Gladstone, Steven (202 (202). Wikipedia accessed June 24th, 2024: https://en.wikipedia.org/wiki/Steve_Gladstone

Gladwell, Malcolm (2002) The Tipping Point. New York: Little, Brown and Co.

Hampden-Turner, Charles (1981) Map of the Mind, London: Beazley Publishers.

Hudson, Frederick M. (1999). The Adult Years: Mastering the Art of Self-Renewal. San Francisco, California: Jossey-Bass Publishers.

Hughes, Marcia and James Bradford Terrell (2007) The Emotional Intelligent Team. San Francisco: Jossey-Bass.

Johnson, Barry (1996) Polarity Management: Identifying and Managing Unsolvable Problems. HRD Press.

Jones, CP; Jones, CY; Perry, GS; Barclay, G; Jones, CA (2009). "Addressing the Social Determinants of Children's Health: A Cliff Analogy". Journal of Health Care for the Poor and Underserved. 20 (4): 1–12. doi:10.1353/hpu.0.0228. PMID 20168027. S2CID 21955262.

Juarrero. Alicia (2017) At the 2017 Cynefin Retreat, Alicia Juarrero introduced the properties of enabling constraints

Jung, Carl (2013) The Essential Jung. (Ed. Anthony Storr). Princeton NJ: Princeton University Press.

Kahneman, Daniel (2011) Thinking Fast and Slow. New York: Farrar, Straus and Giroux.

Kahneman, Daniel, Oliver Sibony and Cass R. Sunstein (2021) Noise: A Flaw in Human Judgment. New York: Little, Brown and Company.

Kanter, Rosabeth Moss (1994) "Collaborative Advantage", *Harvard Business Review*, July-August, pp. 96-108.

Karpman, Steven (1968). Fairy tales and script drama analysis. Transactional Analysis Bulletin, 7(26), 39-43.

Kaufman, Stuart (1998) At Home in the Universe. New York: Oxford University Press.

Kegan, Robert (1994) In Over Our Heads: The Mental Demands of Modern Life. Cambridge, MA: Harvard University Press.

Kolb, David (1984). Experiential Learning: Experience as the Source of Learning and Development. Upper Saddle River, NJ: Prentice Hall.

Kuhn, Thomas (1962) The Structure of Scientific Revolution. Chicago: University of Chicago Press.

Lawrence, Paul and Jay Lorsch. (1967) Organization and Environment. Boston: Harvard University Press.

Lazarus, Richard and Susan Folkman (1984) Stress, Appraisal and Coping. New York: Springer.

Lencioni, Patrick (2005) Overcoming the Five Dysfunctions of a Team, Field Guide, pp. 14-36.

Lewin Kurt (1947) Frontiers in group dynamics: Concept, method and reality in social science; equilibrium and social change. *Human Relations*, 1(1), pp. 5-41.

Lewis, Oscar (1968) "The Culture of Poverty" On Understanding Poverty. New York: Basic Books, pp. 187-200.

Lichtenstein, Benyamin B.; Uhl-Bien, Mary; Marion, Russ; Seers, Anson; Orton, James Douglas; and Schreiber, Craig, "Complexity leadership theory: An interactive perspective on leading in complex adaptive systems" (2006). Management Department Faculty Publications. 8.
https://digitalcommons.unl.edu/managementfacpub/8

Lustig, Robert (2021), Metabolical: The Lure and the Lies of Processed Food, Nutrition and Modern Medicine—Unpacking the Science Behind Food and Health, New York: Harper.

Makary, Marty (2019) The Price We Pay, New York: Bloomsbury Publishing.

Maslow, Abraham (2014) A Theory of Human Motivation. Eastford CT: Martino Fine Books.

Meadows, Donella (2008). Thinking in Systems, White River Junction, VT: Chelsea Green Publishing.

Meadows, Donella (2024) Leverage Points: Places to Intervene in a System. Accessed on June 1. Link: https://donellameadows.org/archives/leverage-points-places-to-intervene-in-a-system/

Meadows, Donella and Associates (1972) The Limits to Growth. New York: Signet.

Meadows, Donella and Associates (2004) Limits to Growth: 30 year update. White River Junction, Vermont: Chelsea Green Publishing

Meadows, Donella and Jorgen Randers (1992) Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future White River Junction, VT: Chelsea Green Pub Co.

Meijen, Carla, and Associates (2020) A Theory of Challenge and Threat States in Athletes: A Revised Conceptualization. Frontiers in Psychology. Link: Frontiers | A Theory of Challenge and Threat States in Athletes: A Revised Conceptualization

Menzies Lyth, Isabel (1988) "The Functioning of Social Systems as a Defence against Anxiety", in Containing Anxiety in Institutions, London: Free Associations, pp 43-85.

Miller, George, Eugene Galanter and Karl Pribram (1960) Plans and the Structure of Behavior. New York: Holt.

Miller, John and Scott Page (2007) Complex Adaptive Systems. Princeton NJ: Princeton University Press.

Miller, William and Stephen Rollnick (2002) Motivational Interviewing (2nd Ed.) New York: Guilford.

National Academy of Medicine (2024) Valuing Americas Health: Aligning Financing to Reward Better Health and Wellbeing. Link: https://nap.nationalacademies.org/read/27141/chapter/1

Oshry, Barry (2018) "Encounters with 'The Other': A History and Possibilities." Posted in The Library of Professional Coaching, https://libraryofprofessionalcoaching.com/concepts/leadership-foundations/cross-cultural-analyses/encounters-with-the-other-a-history-and-possibilities/

Osgood, Charles (1957) The Measurement of Meaning. Champaign, IL: The University of Illinois Press.

Page, Scott (2011) Diversity and Complexity. Princeton NJ: Princeton University Press.

Parsons, Talcott (1955) Socialization and Interaction Process. Glencoe, IL: Free Press.

Piaget, Jean (2001) The Psychology of Intelligence. London: Routledge.

Polanyi, Michael (2009) The Tacit Dimension. Chicago: University of Chicago Press.

Prigogine, Ilya (1984) Order Out of Chaos. New York: Bantam Books.

Rogers, Everett (2003) Diffusion of Innovations (5th Ed.), New York: Free Press.

Rorty, Richard (1989) Contingency, Irony & Solidarity. Cambridge, England: Cambridge University Press.

Rosenthal, Elisabeth (2018) An American Sickness. New York: Penguin.

Rosinski, Phillipe (2003) Coaching across cultures: new tools for leveraging national, corporate, and professional differences. Boston: Nicholas Brealey Publishing.

Rubin, Lillian (1992) Worlds of Pain, New York: Basic Books.

Sanford, Nevitt (1980) Learning After College. Berkeley, Ca: Montaigne Press.

Saphier, Nicole (2020), Make America Healthy Again: How Bad Behavior and Big Government Caused a Trillion-Dollar Crisis, New York: Broadside Books.

Sapolsky, Robert (2004) Why Zebras Don't Get Ulcers (3rd Ed.). New York: Holt Paperbacks.

Sapolsky, Robert (2017) Behavior. New York: Penguin.

Schein, Edgar (1992) Organizational Culture and Leadership. (2nd Ed.) San Francisco, CA: Jossey Bass.

Schön, Donald (1983) The Reflective Practitioner: How Professionals Think in Action. New York: Basic Books.

Seligman, Martin (1991/2006) Learned Optimism, New York: Knopf.

Seligman, Martin (2012) Flourish, New York: Simon Element.

Seligman, Martin (2018) The Hope Circuit, New York: Public Affairs.

Senge, Peter (1990) The Fifth Discipline. New York: Doubleday.

Simons, Robert (2005) Designing High Performance Jobs, Harvard Business Review, July-August, https://hbr.org/2005/07/designing-high-performance-jobs

Smick, David (2008) The World is Curved: Hidden Dangers to the Global Economy. New York: Portfolio/Penguin

Snowden, David (2023) Cynefin Framework. Retrieved from: https://thecynefin.co/about-us/about-cynefin-framework/

Srivastva, Sursh, David Cooperrider and Associates (1990) Appreciative Management and Leadership: The Power of Positive Thought and Actions in Organizations. San Francisco: Jossey-Bass.

Stacey, Ralph (1996), Strategic Management & Organisational Dynamics, Pitman, London

Starr, Paul (1982) The Social Transformation of American Medicine. New York: Basic Books.

Sterling, Peter (2020) What Is Health? Allostasis and the Evolution of Human Design. Cambridge, MA: MIT Press.

Sullivan, Harry Stack (1953) The Interpersonal Theory of Psychiatry. New York: Norton.

Taleb, Nassim. (2010) The Black Swan. New York: Random House.

Tillich, Paul. (1952/2000). The Courage to Be (2nd Ed.). New Haven, CN: Yale University Press.

Toffler, Alvin (1984a) Future Shock. New York: Random House; Toffler, Alvin (1984b) The Third Wave, New York: Bantam Books.

Vakil, Tushar (2012) Google Project Aristotle. Link: project_aristotle_comprehensive.pdf

Vaill, Peter (1996) Learning as a Way of Being. San Francisco: Jossey-Bass.

Vaill, Peter (2008) Managing as a Performing Art. San Francisco: Jossey-Bass.

Vaillant, George (2012) Triumphs of Experience. Cambridge, MA: Belknap/Harvard University Press.

Van Der Kolk, Bessel (2014) The Body Keeps the Score, New York: Penguin.

Waddington, Conrad (1977) Tools of Thought. St. Albans, England: Basic Books.

Waldrop, M. Michael (1992) Complexity, New York: Simon and Schuster.

Walsh, Lisa (2021) The Four Attributes of a Self-Coaching Team, Forbes: Forbes Link: https://www.forbes.com/sites/forbescoachescouncil/2021/09/20/four-attributes-of-a-self-coaching-team/

Watson, Goodwin and David Johnson (1972) Social Psychology (2nd ed.) Philadelphia Pa: Lippincott.

Weitz, Kevin and William Bergquist (2024) The Crises of Expertise and Belief. Harpswell Maine: Professional Psychology

Press.

White, Robert (1959) Motivation Reconsidered--The Concept of Competence, Psychological Review, 66(5), 297–333. https://doi.org/10.1037/h0040934

Young, Jeffrey, Janet Klosko and Marjorie Weishaar (2006) Schema Therapy: A Practitioner's Guide, New York: Guilford Press.

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