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Adaptive Leadership for Agile Organizations

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The Nature of Organizations

What is an organization? What is organization? What does it mean to organize? Why do we organize?

We get the term organization from the early 15th century word *organisacioun* meaning, "structure of the body or its parts" and in the mid 15th century the "act or process of organizing, the arranging of parts in an organic whole." It wasn't until the 18th Century (1829) that the term was used to mean "an organized body of persons" or a "system, establishment, constitution" (1873). The term is from the Medieval Latin *organizationem* or *organizatio* which derives from the Latin *organum* "instrument, organ." The word organ is a fusion of the late Old English *organe* and Old French *orgene* (12th century), derived from the Latin *organa* and the Greek *organaon* all of which refer to a musical instrument, tool or sense organ. Literally, the terms are rooted in the Proto-Indo-European **werg-ano-*, the root of which (**werg*) means "to do." The root **werg* forms similar words such as: organ; organelle; organic; organism; organize; organization (among others like energy and work). In turn, **werg* originates from the Greek *ergon* "work" and *orgia* "religious performances" as well as the Armenian *gorc* "work" the Avestran *vareza* "work or activity" the Gothic *warkjan* and Old English *wyrcan* "to work" and *weorc* "deed, action, something done" and the Old Norse *yrka* "work, take effect [1,2]."

Today, the terms organ and organization have several meanings, and yield a long and general history of their use:

or·gan /ˈôrgən/ *noun*

1. A part of an organism that is typically self-contained and has a specific vital function, such as the heart or liver in humans. "The internal organs."
2. A large musical instrument having rows of tuned pipes sounded by compressed air…
3. A department or organization that performs a specified function. "The central organs of administration and business."

or·gan·i·za·tion /ˌôrgənəˈzāSH(ə)n/ *noun*

1. An organized body of people with a particular purpose, especially a business, society, association, etc. "A research organization."
2. The action of organizing something. "The organization of conferences and seminars."

3. The structure or arrangement of related or connected items. "The spatial organization of the cells."
4. An efficient and orderly approach to tasks. "Apparent disorder and lack of organization."

But we should also consider the verb form *to organize* as in both antiquity and in modern day we are often referring to the process of organization and also the method in which it comes to pass and whether it is transitive (not requiring an object) or intransitive.

or·ga·nize \ ˈȯr-gə-ˌnīz \ *transitive verb [3]*

organized; organizing

1. To form into a coherent unity or functioning whole : INTEGRATE trying to organize her thoughts.
2. To set up an administrative structure for.
3. Organize a company to manufacture his invention to persuade associates in an organization especially: UNIONIZE organize the white-collar workers.
4. To arrange by systematic planning and united effort. Organize a tour of the campus for the new students.
5. To cause to develop an organic structure.

or·ga·nize \ ˈȯr-gə-ˌnīz \ *intransitive verb*

1. To undergo physical or organic organization. A clot organized in the femoral vein.
2. To arrange elements into a whole of interdependent parts. Began organizing for a victory celebration.
3. To form an organization specifically : to form or persuade workers to join a union workers had the right to organize.

It is important to understand the full breadth of what we mean by *organization*, because we apply the term to all types of organizations:

- Both human organizations and other types of organizations (organelles, organs, organisms);
- Both formal and informal organizations; and
- Both deliberate and spontaneous organizations.

Figure 1 illustrates a number of different types of organizations (any of which we are referring to in this paper) including (from left to right, top to bottom): organelles, organs (heart, liver, lungs), organisms (bacteria, amoeba, spider, rabbit, human or deer), collections of individual organisms (dyads, triads, and groups, formal hierarchies, businesses, firms, companies, multinational conglomerates), and aso organized things, many of which occur spontaneously such as libraries, mental models, knowledge, networks, groups formed around issues or interests, rallies, protests, organized crime families and syndicates, cities, superorganisms, ecologies, and the Earth-ecology itself.

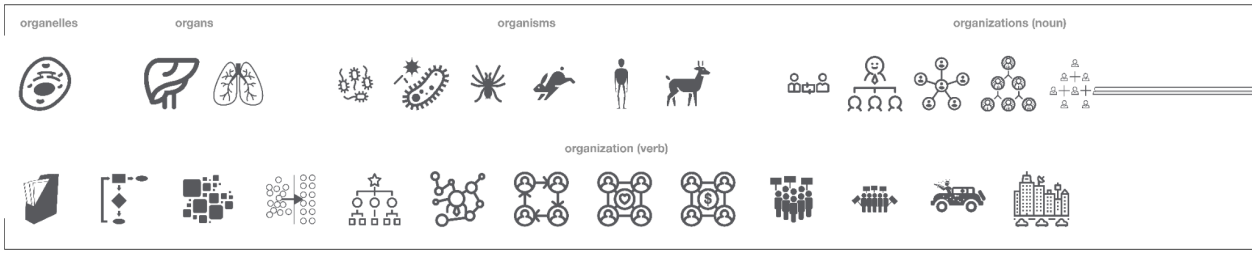

Figure 1: Types of Organization.

But at the same time that we *generally* mean all of these things when we say organization, we also specifically mean human organizations (formal and informal) such as those we develop, manage, and lead in order to get something done together that we couldn't get done on our own. We mean companies, governments, movements, nonprofits, for profits, NGOs. And when we talk about those specific human organizations we refer to both the organization itself (the entity) as well as how it is organized. This chapter reviews the VMCL Theory of Organization [4,5]. VMCL stands for the acronym of its elements, which constitute four universal functions of all organizations: Vision, Mission, Capacity, and Learning. These terms are relevant to human organizational leaders who hope to increase the effectiveness of organizations. But, although the specific terms we use to describe VMCL theory are psycho-social in nature, the functions we are elucidating are not solely applicable to human concerns and organizations. These functions are universal to organizations of all kinds. In addition, each of these functions is tied to a rich history of scholarship in the areas of systems sciences and systems thinking.

It is critically important that this chapter examines organization as both a noun (organization) and a verb (organization, as a result of organizing) for a number of reasons:

- The interconnectedness, speed, and complexity of the world is increasing;
- We live in world characterized as Volatile, Uncertain, Complex, and Ambiguous (VUCA[1]);
- Our thinking is biased towards mechanistic, reductionistic, simplistic, and outdated models of human organizations;
- We are out of sync with the organic complexity of our organizations; and
- The increased competitiveness and complexity of the business environment means adaptivity, agility, fluidity, and flexibility are absolutely critical for organizational survival and thriving.

All of this culminates in a single conclusion: *humans need to better understand the concept of organization, as manifested in nature, to better organize our own human organizations.* In short, we need to consult the organizational experts. And, for a long time, nature holds the secrets to organizing and organization—that humans have ignored or overlooked.

Figure 2 illustrates the four universal functions that all organizations share. Whether that organization is an amoeba or Acme Corp makes little difference. Neither organization cannot survive without fulfilling these four functions, which we call Vision, Mission, Capacity, and Learning or VMCL.

[1] Developed at the U.S. Army War College, the term VUCA was first used in 1990 for a course on Senior Leadership to characterize conflicts in the post-Cold War era. See: [6], p. 128.

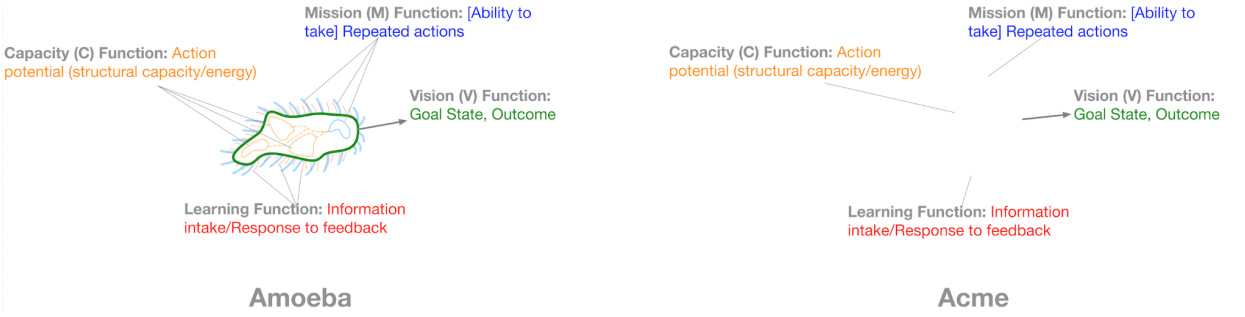

Figure 2: Four Universal Functions of Organization (VMCL).

Table 1 details the following for each of the four functions:

- the ***function*** itself, expressed in plain terms;
- the ***systems concept*** (research) upon which this function is informed (which we will further elaborate later on);
- a ***friendly name*** for the function that is simple, familiar, and human-friendly; and
- an ***example*** of what we mean by the function.

Function	**Friendly Name**	**Systems Concepts**	**Example**
Goal State, Outcome	Vision (V)	POSIWID, emergence[2], attractors	Survive, thrive, extinct, etc.
Repeated Action(s)	Mission (M)	CAS/Simple Rules	Move, metabolize, multiply
Action Potential (structural capacity/energy to do Mission)	Capacity (C)	Structure Determines Behavior, System of Systems	Convert food to energy
Information intake/Response to feedback	Learning (L)	Feedback, Mental Models (schema)	Learn something new, change behavior

Table 1: Detailed description of the functions.

So, who are the experts in organization? Who should we consult to learn better ways to organize? Nature provides some beautiful, elegant, and timely examples in the world of superorganisms and complex adaptive systems (CAS)—the world of bees, fish, ants, and swarms of all kinds. We can—and must—learn a lot from these CASs, because they hold the secret to the characteristic we most desire in our organizations but which is also the most difficult to manage and lead: *adaptivity*. The ability to adapt—to quickly change course or move in a new direction as a response to feedback one receives from the environment. The bigger an organization becomes, the harder it is to solve. We all want the benefits of being big like an elephant but also fast like a gazelle. Nature has already solved this problem. The secret can be found in CAS.

[2] Emergence (Vision) is the result of simple rules (Mission).

VMCL Theory

VMCL Theory[3] is a systems thinking approach to organizational leadership and design that is predicated on the idea that four natural organizational functions can be leveraged to optimize emergent outcomes within a system. All organizations are complex adaptive systems characterized by the four inherent functions of vision, mission, capacity, and learning. Each function (or rule) is concisely defined below in Table 2.

Simple Rule	**Short Definition***
Vision (V)	Desired future state or goal
Mission (M)	Actions that in repetition lead to vision
Capacity (C)	Mission-critical systems (i.e., system structure that supports ability to do mission)
Learning (L)	Continuous improvement (through modification of mental models based on feedback from the external environment) that increases Capacity

Table 2. VMCL Organizational Functions.

Each rule—vision, mission, capacity, and learning—is a natural function of any organizational system, whether or not it is consciously designed and articulated. Each VMCL function should also be a core cultural tenet of any organization. This means leaders need to repeatedly build and share mental models of their VMCL throughout the organization. These four functions operate in all organizations, irrespective of whether they are fully shared or understood or agreed upon. An organization might not explicitly articulate its desired future state of goal, but it is working toward one nonetheless. While the mission might not be consciously known by most employees, there are repeated tasks undertaken in pursuit of the vision.

In summary, VMCL provides leaders a playbook of four simple rules that must be the focus in order to bring about an organization that adapts [7,8]. In other words, VMCL helps us to cut through the complexity and identify the places where attention must be focused: on the underlying functions that yield adaptivity.

VISION (V)

An important characteristic of systems is that they have a purpose or a desired goal state. Systems theorists offer that systems will therefore inherently strive to reach these goals regardless of the barriers in their way [9]. Every system—every organization— has a purpose. Sometimes the organization has a formalized, explicit, stated purpose and sometimes it doesn't. But even when an organization doesn't have

[3] In popular culture the term theory seems to mean a kind of "guess" or at best a "hypothesis." It inheres connotations of "opinion" or "one's perspective" as in the lament, "well that's just your theory." In scientific, scholarly, or academic circles, the term "theory" means something quite different. It means something that is factual, supported not merely by evidence but by a tremendous amount of evidence. Einstein's relativity, Darwin's evolution, Newton's laws are all *theories*. We are using the term theory in this latter sense. VMCL Theory is factual, supported by a preponderance of evidence from multiple disciplines using multiple methods (thereby increasing its validity).

a stated purpose that doesn't mean it doesn't have a purpose. And, it is absolutely critical to realize that even when an organization does have a stated and explicit purpose, that doesn't mean that is what the organization's actual purpose is.

Systems Concepts: POSIWID, Emergence, Structural Coupling, and Attractor Basins

Vision is a friendly term that is tangible to organizational leaders, but the term is tied to some important systems concepts like: structural coupling, and attractors and attractor basins, emergence, and POSIWID. All organisms and organizations are structurally coupled with their environment. That is, the structure of the organism is coupled (related at every moment in time and in every possible contact point) to the structure of the environment. This structural coupling leads to attractors and attractor basins which are somewhat preordained statistical patterns of structural coupling. To understand these ideas, think of a topological domain, akin to a miniature world with mountains and valleys, and two objects: a sphere and a cube (see Figure 3). Note that the environment (the brown part) is sloping downward from right to left with varied ridges and valleys. If we were to put the sphere at point A, it is highly likely that it would always end up at point D. So we can say that D is the attractor basin for the Sphere. But if we were to put the cube at point A, we can imagine that it does one of a few options: (1) it stays at A (because the terrain around A isn't steep enough to let gravity do its work), (2) it rolls a few tubles and stops at B, (3) it rolls past B and therefore over the edge but gets hung up at C, or (4) it hobbles all the way to D like the Sphere did.We can see that the structure of the environment and the structure of the objects are "coupled" and this coupling of all of the features of both the object and the environment leads to attractors and attractor basins. The strength of these attractors is born of this structural coupling. In the case of the Sphere, the D attractor basin is strong and it is extremely likely, even factual, that the Sphere will end up at D. Organizations, existing in their environments, are no different. They are structurally coupled with their environments. At the same time they are Complex Adaptive Systems (CAS) that can adapt and therefore change their predicament. This brings us to the idea of emergence, or what the output behavior of a system is. A Vision is an emergent property of a system. It arrives at the goal state or it does not. It can therefore be said that the purpose of a system is what it does or POSIWID.

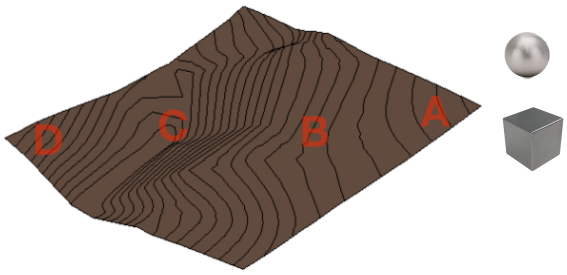

Figure 3: Structural coupling of Object and Environment.

Stafford Beer offered the popular term, POSIWID, which means the **p**urpose **o**f a **s**ystem **i**s **w**hat **i**t **d**oes [10]. In other words, the outcome of any given system is a manifestation of its purpose, whether it was intended or unintended, formal or informal, explicit or implicit. From the simplest to the most complex organisms, there is a purpose. In many cases, it is a simple purpose: survival long enough for replication or reproduction. Whether you're an amoeba or Acme Corp, your organization has a POSIWID purpose.

The key is to try to get the stated, public, formal, and explicit purpose and this POSIWID to be in alignment. This will be clearly illustrated in the Wells Fargo case later in this chapter.

In organizations, that desired goal state is called Vision. The concise definition of vision is a desired future goal or state, but effective visions must have a number of other qualities. First, all organization's articulated vision must be a desired future state. In other words, a change your organization hopes to bring about that is evident when accomplished. A leader must therefore have both clarity and agreement on the goal—it must be a shared mental model across the organization. Second, the vision should be intrinsically motivating and be a source of inspiration that everyone wants to make an effort towards. Third, visions are best expressed as a short and simple statement that lacks empty words or jargon to ease the organization-wide understanding of it's meaning. Fourth, the vision must be measurable, with articulated metrics that demonstrate when an organization has successfully accomplished its vision.

Work on Vision is Indirect Through Mission

There is a Vision Paradox. While the Vision of an organization is its *raison d'etre*—its reason for existence, it cannot be worked on directly. The organizational Vision is an emergent property of the repeated actions of the Mission. Thus, the Adaptive Leader must ensure that there is alignment from Mission to Vision. Every mountaineer knows that the reason for the expedition is to stand on the summit. But every mountaineer also knows the enormous capacital preparation required just to get to the base of the mountain and also, that if the focus isn't on the mission at hand, "take one step, repeat," the summit will never be attained.

MISSION (M)

Vision and mission should be enculturated in the organization. They are not statements on the company website and placed into proposals or on letterhead. Instead, they are mental models that should be shared by every single individual in the organization. The mission of an organization is the action(s) taken repeatedly by everyone in the system to bring about the vision.

Systems Concepts: CAS, Autonomous Agents and Simple Rules Lead to Emergent Properties

Organizational design, change and leadership is increasingly complex in our volatile, uncertain, complex and ambiguous (VUCA)[4] world. In order to navigate this new landscape and to design and lead agile and adaptive organizations, systematic approaches to organizational leadership and design are needed. These solutions do not need to be complex. In fact, based on years of research that unites systems thinking with organizational design, leadership and change, we argue that designing and leading complex organizations is rooted in simplicity.

Nature is the original inventor of organization and has a way of dealing with complex issues simply and elegantly. In fact, modeling a successful organization achieving collective action, one needs to look no further than nature's superorganisms. Superorganisms are independent organisms that act in unison. These independent organisms, whether they are bees, ants or starlings, cannot accomplish much when acting alone. However, together they are more adaptive, intelligent and capable. These superorganisms are

[4] Developed at the U.S. Army War College, the term VUCA was first used in 1990 for a course on Senior Leadership to characterize conflicts in the post-Cold War era. See: [6], p. 128.

complex adaptive systems (CASs), or individual agents that are working towards a common vision. Figure 4 illustrates the basic formula of a CAS: individual agents following simple rules result in collective behavior that leads to emergent property (or outcome).

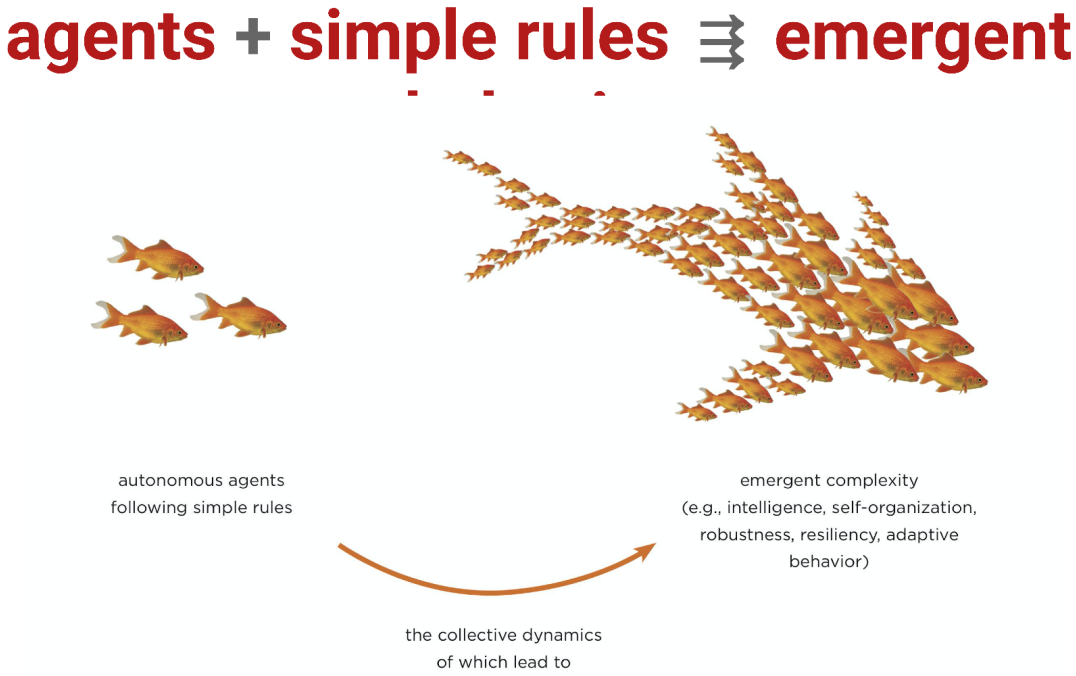

Figure 4: Simple Rules Lead to a Superorganism.

Consider how millions of starlings can move so gracefully together depicted in Figure 5 [11].

Figure 5: Starlings are a Complex Adaptive System [12].

This behavior is not a result of one fearless leader, but instead the result of an individual agent following simple rules [13]. The result of autonomous agents all following the same simple rules collectively lead to complex, adaptive behavior. Based on Iain Couzin's research on animal's flocking behavior, the complex behavior of these flocks boiled down to three rules: 1. Maintain a constant distance from nearest neighbors; 2. Adjust direction based on nearest neighbors; and 3. Avoid predators. Like these starlings, all organizations are CASs because they are made up of individuals adapting to their environment. An organization's behavior can not be predicted by looking at any one person (agent). Instead, its behavior is an emergent property of the many agents and their interactions with each other and their environment.

The relationship between complex adaptive systems and organizational structure has been discussed in past writings [14,15] that acknowledge the importance of recognizing that organizations are complex adaptive systems that produce emergent, often unpredictable, behavior. For leaders, *recognizing* that an organization is a CAS is an important first step, followed by an important analysis of how to shape the emergent behavior of the organization. Note also that while the name *complex* adaptive system may lead you to believe that CASs are *complex* to organize and lead, this is not necessarily the case. Murray Gell-Mann (Nobel Laureate in Physics) explained that to understand complex systems it is important to "connect with both simplicity and complexity." This means that leaders can design and lead their organizations (CASs) by understanding and *leveraging the simple rules of a system*. Doing this will foster an organization that acts like a superorganism, that successfully learns and adapts to changing circumstances.

Based on understanding CASs, to influence the behavior of a system, leaders should therefore focus on *the underlying rules that bring about the emergent behavior they seek*. In other words, influencing the

collective behavior of the individual agents in a system begins by identifying the simple rules that lead to it in the first place. The four simple rules inherent in systems (organizations) are: vision, mission, capacity, and learning (VMCL). VMCL is based on a mathematical formalism that articulates how organizations work as complex adaptive systems and implicitly operate based on these four functions. In other words, VMCL explicates the four simple rules for creating an adaptive organization. And, importantly, leveraging VMCL can provide the formula to design, lead and manage a complex adaptive organization.

Vision-Mission Alignment

Like visions, missions should also be clear, concise, and easily understood — as they direct how everyone in the organization expends their daily efforts. *It is the repeated doing of the mission that will lead to accomplishment of the vision.* Because the mission statement guides organizational members' work, every mission must state *who* does *what* for *whom* (or for what *purpose*). Missions must also be measurable so that leadership can continuously assess to what degree mission is helping to achieve the organizational vision. Most importantly, vision and mission *must be aligned with one another.*

Because the autonomous agents and simple rules result in collective dynamics that lead to the emergent behaviors we see, it is critically important that Mission is coupled with Vision. If the simple rules (a.k.a. Mission) will naturally result in an emergent outcome (a.k.a. Vision) that is different from the stated Vision then either the Vision must be restated to align with the Mission OR the simple rules of the Mission must be redesigned to align with the stated Vision. If the degree of alignment is unknown, then attention must be paid to learning over time to ensure that greater alignment is incrementally achieved.

We have found through research and practice [16,17] that there is often a misalignment between visions and missions. It appears most organizational leadership does not understand the purpose of a vision and mission, let alone the difference between the two. The vision of an organization is the future goal or state that the organization hopes to reach. For a mountain expedition team, this is the summit. This future state can take many different shapes and forms depending on the organization. Mission, on the other hand, is how you get to the vision, or the daily work you need to put in. For a mountaineer the mission is often "take one step, repeat" until you reach your goal state (or the summit). It is up to the organizational leader to make the goal state crystal clear and ensure the mission of the organization, if done repeatedly, fulfills the vision. Figure 6 provides two examples of non-corporate visions, missions and their alignment.

Figure 6: Vision and Mission Alignment[5]

First, if your vision is to spread your particular religious beliefs (we are not promoting any one religion over another), then the mission that will lead to that vision is to go through the world and convert those who are not yet converted to your preferred religion. In other words, my daily work (mission) is to "convert the unconverted" and you can see that if one does that over and over - the vision gets closer. Another powerful example comes from nature, where resilience and biodiversity of species is the goal - or vision. And the mission programmed in the many biological organisms (agents in the system) is to simply "go forth and multiply." Notably, while the content of the vision and mission is important, of equal importance in the alignment between them, in terms of successfully reaching the desired goal state of any given system.

CAPACITY (C)

Organizational Capacity consists of numerous systems, processes, and roles. In many ways, it is so complex that its capacity should be modeled as a system of systems to achieve a mission. Most importantly, capacity must *align* with mission. Capacity refers to systems of systems that create the abilities of an organization to do it's work (mission). Capacity is an absolutely indispensable organizational function that allows for organizational efforts and action. Capacity must also be measurable (in terms of enabling mission).

[5] The statements do not serve as endorsement, or political commentary.

Capacity is a natural function of an organization that must be directed to support the ability of agents in the system to do the mission, which in turn achieves vision. Capacity consists of all the systems needed in place to do the daily tasks of the organization. Depending on the organization, there are often a large number of capacital systems that can support a mission. Often, due to the dizzying array of organizational needs, it can be useful to break these systems up into first-order and second-order systems. First-orders are directly related to the mission (research and development, sales, marketing, etc.) and second-orders are required but less directly related (payroll, facilities management, etc.). It can often help to visually map an organization's systems of capacity, to determine how the systems interrelate, and serve the overall mission of the organization. As feedback informs organizational learning, and capacital systems are modified accordingly, the map can be a living tool representing the organization's evolution.

Systems Concepts: Structure Drives Behavior, System of Systems

A foundational concept in the dynamics of systems is an idea summarized as, "the structure of a system drives its behavior" or shortened, simply "structure drives behavior" or SDB [18]. Senge popularized the phrase "structure determines behavior" in The Fifth Discipline (1990) [19]. But Jay Forrester's earlier writings on System Dynamics discussed the idea that "structure influences behavior [18,20]." In short, this means that in order to determine how and why certain behaviors occur, leaders must look at interactions among the parts of the system, i.e., the structure [21]. Thus, the leader can "see and understand the whole created by the interactions between the elements of the system [21]."

We will use a hypothetical (and simplified) VMCL to provide an example. Imagine that the goal of your organization (a hospital) is "No Untimely Deaths." Let's also create a simplified and hypothetical Mission: "Care, Care, Care." Now let's work on some capacital systems to support the Mission. There are numerous systems we need to zero in on on just one for the example. We'll focus on nurses and what they can do to repeatedly provide care and ensure that no Untimely Deaths occur. There are of course many nursing systems one could focus on, but this example looks at the nursing station. How is the nursing station used (as a hub) for all nursing activity and how does that affect patient care and deaths? Researchers tested two nursing station designs (A and B) and learned that design B results in better care and less patient deaths. Obviously, we would want to redesign all of our nursing stations to design B. But *why* does Design B lead to better care and less deaths? The answer is: because structure determines behavior. Something (or many things) about the design of the nursing station leads to catching more mistakes, making less mistakes, making better diagnosis, doing better at scheduling shots, medications, meals, etc., and/or numerous other factors. The structure of the station changes the behavior of the nurses which in turn leads to collective dynamics and beneficial emergent outcomes. In fact, this is not a hypothetical situation, there is ample evidence that shows that the structure and culture of nursing stations [22] can have a significant impact on patient mortality rates [23,24].

A System of Systems Focused on Doing Mission

Capacital systems can be many and varied and the complexity inside any one of these systems can equal the complexity of the whole. Despite this complexity leaders must cut through the morass and ensure that: (1) a system of systems is developed (rather than a bunch of systems) and (2) this system of systems (SoS) is designed, built, managed and led for a single overriding purpose—to increase the capability to do

the organization's Mission as shown in Figure 7. In turn, if the Mission is coupled with the Vision, as VMCL implores, the organization's substantive and majority work in Capacity will not be wasted.

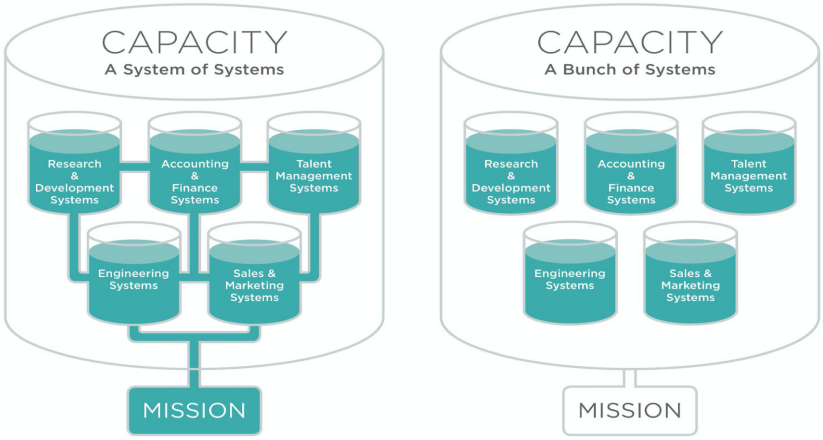

Figure 7: A System of Systems focused on Mission vs a Bunch of Systems not focused on Mission.

LEARNING (L)

Learning is an innate function of all organisms that consists of testing one's mental models (understanding) of phenomena against reality, using that reality as feedback on those models, and then adjusting those mental models to better approximate the real world (Figure 8). Research into biology and evolution shows that "Many of the striking and sometimes bizarre patterns that characterize the evolution of such systems have simple, natural explanations that involve the effects of feedback loops [25]." This iterative process is key to all organizational learning, as they are complex adaptive systems made up of individuals, who also learn in this way.

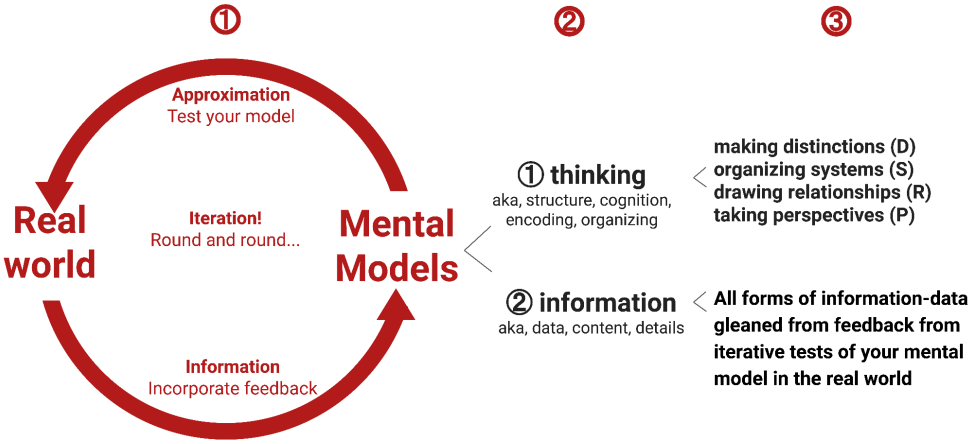

Figure 8. Mental Models Approximating Reality, Which Provides Feedback to Adapt our Mental Models.

Learning is foundational to every organization, as the organization's capacity and mission should always and continuously be informed by learning. Leaders should ensure that organizational learning occurs constantly and build a culture in which organizational members are aware of and utilize this innate, ongoing function at all times [26]. Leaders must promote learning by individuals and groups as a way to institutionalize the building, sharing, capturing, and dissemination of learning organization-wide. Organizational learning should align with, and serve the organization's Vision, Mission and Capacity. A successful organization possesses a shared focus on how to increase capacity and optimize systems to do their mission faster, cheaper, and better in pursuit of achieving the vision. Over time, reflective organizations often find that their vision should adapt to reflect new internal and external realities in order to succeed. And there is consensus that the ability to learn leads to both an evolutionary and competitive advantage in nature [27].

Systems Concepts: Feedback, Mental Models (schema)

Organisms and organizations that are not receiving and integrating feedback from their environment are in the process of dying. Perhaps the best example (for explanatory purposes) of feedback in a system is something that each of us [hopefully] does every day: showering. When you step into the shower, you put your hand under the water to test how hot the water is. If it is too hot you turn the dial right. If it is too cold, you turn the dial left. Over time, you can even learn exactly where the dial needs to be for the perfect water temperature for you. This is feedback and it is essential to learning and we are doing it all the time. In an organization, every employee (as well as customers, suppliers, partners etc) are also doing it all the time. Taking in information and making meaning of it to alter action or behavior. This is called individual learning. Organizational learning is when this meaning is made together, shared by all.

Organizational Learning Drives Everything

One could argue that the most important part of the VMCL model is Learning (L). Organizational learning is the process of sharing mental models across individuals and adapting the models to the environment. Gell-Mann, in his analysis of some of the world's foundational complex adaptive systems, found individual thinking and learning to be the driver of cultural and organizational evolution, or the ability to adapt [28]. Learning is equally important to groups and organizations. All organizations are learning organizations that test mental models, or perceptions of how the world is, against feedback from the real world. Notably, this process of learning is not always beneficial to the organization if leadership does not put into place mechanisms to increase the organization's capacity to do the mission. As a child can develop unfit mental models based on their experience, organizations too can reinforce poor behaviors and culture. This detrimental behavior is seen across organizations, often due to poor organizational leadership. The Wells Fargo cross-selling scandal, where a pressure cooker sales culture fostered unethical, illegal behavior, was one such example which we will delve into in greater detail below. Learning should instead adapt and improve mission-critical systems that help the organization work towards their aspirational goal (their vision).

Case study: A Systematic Failure

The superorganism behavior detailed in the description of CAS above is the organizational ideal—a collection of autonomous people acting as one toward a singular goal. While we all want our organization to act like a superorganism, adapting to the VUCA world based on real-world feedback, this is most often

not the case. Most organizations do not act like superorganisms, acting autonomously-inunison and adapting to the changing landscape. When organizational leadership fails and does not guide individual actors with simple rules the consequences can be serious (or alternatively when leaders provide maleficent simple rules *covertly* and *implicitly* through system structures, incentives and punishments). Emergent behavior will result regardless, often based on implicit, unwritten rules. As seen in the case of the Wells Fargo's cross-selling scandal, this emergent behavior can be negative and even fraudulent. Until recently, Wells Fargo had a reputation for strong organizational management, due to the fact that the company came through the financial crisis unscathed, and even better off than before the crisis began [29]. However, as the recent cross-selling crisis revealed, strong management is not synonymous with *systems leadership*. In this case, leadership had *stated* a vision for employees, yet the incentives leadership offered actually steered employees away from the stated vision towards an *unstated* one: to maximize upselling and profits. More specifically, the incentives leadership offered became *simple rules* the employees (agents) followed locally to upsell products (unfortunately they were so motivated to do well that many employees chose to do so in an unethical manner).

Cross-Selling Scandal

In 2013, Wells Fargo employees in Southern California were found to be opening new accounts and issuing debit or credit cards without customer knowledge to meet their sales goals [30]. In September 2016, Wells Fargo admitted that their employees opened as many as 2 million accounts without customer authorization over a five-year period [31]. Approximately 5,300 [32] employees were involved in these actions that were in opposition to the organization's stated vision: "satisfy our customers' needs, and help them succeed financially [33]." How exactly did this happen?

Brian Tayan, a Researcher with the Corporate Governance Research Initiative at Stanford Graduate School of Business, in his analysis of the scandal, explained [34]:

> "Some outside observers alleged that the bank's practice of setting daily sales targets put excessive pressure on employees. Branch managers were assigned quotas for the number and types of products sold. If the branch did not hit its targets, the shortfall was added to the next day's goals. Branch employees were provided financial incentive to meet cross-sell and customer-service targets, with personal bankers receiving bonuses up to 15 to 20 percent of their salary and tellers receiving up to 3 percent."

The bank's practice of designing tough sales targets were aimed at increasing product sales, not meeting the organization's customer-focused vision. *Instead, these targets implied a set of rules they were to follow.* The 5,300 employees that independently engaged in fraudulent behaviors were not unlike flocking starlings: following *implicit* rules that drove [in this case negative] emergent behavior. The emergent behavior is deemed *negative* for two reasons: (1) it was unethical and illegal and (2) it was in opposition to the stated vision and mission and therefore organizationally hypocritical and lacking integrity (which of course, long-term, is neither good for employee retention nor customer satisfaction).

Applying VMCL to Wells Fargo

VMCL represents four functions that are at play in any organization. While Wells Fargo claimed to have had an established vision statement,[6] the shared mental models among employees were not well-designed. More specifically, the vision statement did not describe a future state or purpose. Because employees did not have a clear vision of the desired future state, or goal, of the organization, implicit mental models were formed and acted upon. These mental models were likely based in part on sales metrics and incentives (i.e., systems structures that drive behavior) that promoted maladaptive learning, subsequent capacity-building and its ensuing repeatable actions, all of which were misaligned with the organization's stated vision. In other words, leadership (either through incompetence or impropriety) ensured certain capacital system structures were in place that drove individual learning to adapt new structures that guided repeated actions at the agent level that ensured the POSIWID outcome. At the time of the scandal, Stumpf claimed:

> "[Our vision] is at the center of our culture, it's important to our success, and frankly, it's been probably the most significant contributor to our long-term performance [35]."

In fact, nothing could be further from the truth, systematically speaking. The incentives and metrics put in place supported organizational learning in opposition to the "vision" statement because it was profit focused, not customer focused. The sales metrics led to an implicit vision that shifted focus to maximizing profits for executives and shareholders. To meet this *implied* vision, sales staff were tasked with an *implied* mission, as demonstrated by their sales metrics, of selling more solutions to customers, regardless of a customer's need. It was then up to the sales team, to build new, creative systems and strategies to increase their capacity to carry out this implied mission. In this case, it led to opening new products *without customer consent*... and it worked (for a while).

This new capacity helped employees to meet their sales targets, and they received positive feedback (organizational learning) from management (in the form of financial incentives) because it resulted in maximizing the company's (but especially management's) profits (which more than likely was the maleficent and unstated POSIWID vision). This real-world feedback served as a *learning mechanism* for the sales team, validating and normalizing a severely fraught mental model of sales tactics that propagated the cycle of illegal, destructive behavior. It is important to remember that all organizations are learning organizations, because people adapt based on real-world feedback. Eventually, low-level employees adapted to the aggressive sales culture with these new capacities in hand. In other words, the agents in the system did exactly what they should do. They adapted. The problem is, they adapted to either the corrupt, maleficent, unethical, and illegal or [being kind] willfully incompetent and implicit directives of leadership.

It was up to the leader to shape learning, and to ensure that learning functions focused on organizational capacity to do the mission and achieve the *stated* vision (not the implied one). This requires building the right mission-critical systems, and strengthening these systems through organizational learning. Table 3 shows the undesirable (illegal) behaviors undertaken by Wells-Fargo employees, the *implicit VMCL* that created them contrasted to the desired behaviors they'd like to see out of the system and the related *explicit VMCL* that would bring that about.

[6] Wells Fargo's stated vision statement is: "satisfy our customers' needs, and help them succeed financially."

System-behaviors you **do not like**	**Implicit** VMCL functioning to create them	System-behaviors you'd **like** to see	**Explicit** VMCL that would bring them about
Fraudulent banking practices	(V) Maximized profits for Executives and Shareholders	Behavior that balances ethics and profit	(V) Trust in Financial System (and/or big banks that make it up)
	(M) To sell more solutions per customer (regardless of customer need)		(M) Sell customer value again and again
	(C) Build creative new systems and strategies to increase their capacity		(C) Various explicit systems that facilitate and incentivize customer value/satisfaction, etc.
	(L) Low level employees learn to adapt to pressure cooker culture		(L) Targeted-learning to improve systems

Table 3. Wells Fargo's Implicit and Explicit VMCL.

When managers are aware of the simple rules of VMCL operating within their organization, they can leverage them to realize system behaviors they *want* to see (e.g., behaviors that balance ethics and profit). They also can use them to see more and sooner what is going on so that the necessary corrections can take place. In this case, instead of maximizing profits for shareholders and executives, Wells Fargo's customer-focused vision should have been structured around the company's desired future state. To achieve the company's vision, the Wells Fargo sales team did not need to sell customers *more* products, but instead to sell customers more *value*, again and again (i.e., the Mission). The executive team needed to work with sales to develop explicit capacital systems to accomplish this mission, and associated targeted-learning to improve upon these systems. In this way leaders could have used complexity to the advantage of the corporation (their fiduciary responsibility) rather than using complexity as a smoke-bomb to occlude their maleficent shenanigans.

Conclusion

The modern environment in which all organizations operate is highly complex, rapidly changing, and characterized by information overload and constant technological innovation. Leaders, policymakers, administrators, and must continuously adapt and update their mental models. This can help address the issue that many of the problems organizations face today are a result of the discrepancies between how people in the organizational system *think* it works and how it *actually* works.

The implications of seeing any organization as a CAS is a critical element for effective leadership of any organization. Elaborating four simple rules that will focus leaders and team members on executing the organization's mission to achieve its vision with maximal efficiency and success is paramount to a new approach to leadership, management and change. VMCL explains how to have a focused, measurable,

and achievable vision, a mission that offers simple rules that when followed by group members achieve the vision, helps direct the building of capacity aligned to the mission, and teaches how to build a culture informed by continuous learning of shared mental models.

Understanding complex adaptive systems helps us leverage complexity to our advantage, especially in organizations. Moreover, problems of infinite complexity can be understood, explored, and solved knowing these simple rules of VMCL. Critical to implementing VMCL in various organizations is a leader's continuous efforts to align the mission with the vision, capacity with the mission, and to set up systems to incorporate continuous feedback so that every aspect of the systems is informed by learning.

Leaders who desire agile, adaptive organizations must understand that their organization is a CAS. Insomuch as it is, leaders must also understand where their efforts will be most effective. Table 4 illustrates the line beneath which leadership actions will have significant leverage on the system (the CAS). Above the line the complexity of collective dynamics will dampen any intervention. But below the line, leaders can make a significant impact on the system. Below the line means that leaders must focus on (1) the agents and (2) the simple rules (aka a VMCL culture).

Formula for a Complex Adaptive System (CAS)	**Where can you be most effective?**
Emergent phenomena (complexity, intelligence, surprising)	**Above this line the dynamics are too complex and you have little influence or control**
Self-organization & collective behavior around rules	
Simple interaction rules	**Below this line you have the maximum control to tweak the rules or to select or train the agents**
Autonomous agents	

Table 4: Where Leader Actions Will Be Effective In A CAS.

Leaders who desire agile, adaptive organizations must therefore do two things.

1. **Focus on Autonomous Agents:** First, they must ensure that their employees are systems thinkers. Systems thinking (DSRP) drives individual learning which drives organizational learning which in turn drives Capacity, Mission and Vision. In other words, they must build an Organization of Systems Thinkers.
2. **Focus on Simple Interaction Rules:** Second, they must ensure that the employees share a common mental model of the VMCL of the organization. In other words, they must build a Culture of VMCL.

An Organization of Systems Thinkers

VMCL Theory provides an organizational model to design and lead adaptive and agile organizations. Just as an organization must be constantly learning and adapting, its employees must be doing the same. For organizational learning to take place, individual learning must be encouraged. Systems thinking promotes such learning. "Systems thinking is the field of study that attempts to understand how to think better about real world systems and the real-world problems we face [36]." There are four foundational cognitive skills present in all systems thinking frameworks: making distinctions, organizing part-whole systems, recognizing relationships and taking perspectives (or DSRP). These are the building blocks of cognition that humans do unconsciously throughout the day, every day. Being a systems thinker means using these cognitive building blocks to question accepted mental models that impact the way we see the word, which we build using accepted ideas and perspectives [36,37]. Figure 9 illustrates the relationship between Systems Thinking and the four components of Vision, Mission, Capacity and Learning.

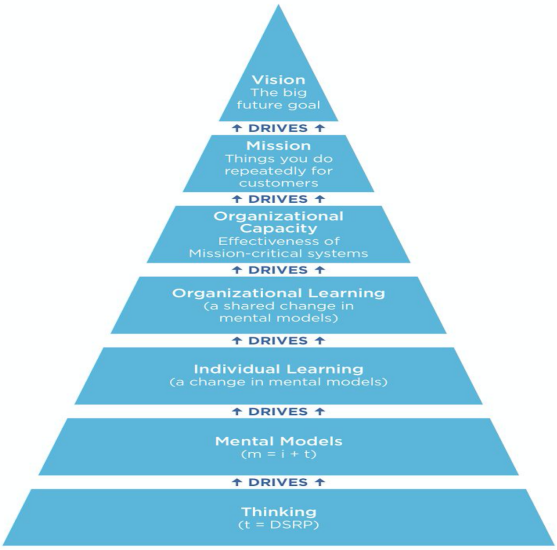

Figure 9: Systems Thinking (DSRP) drives Individual Learning (L_I) which drives Organizational Learning (L) which drives Capacity (C) and Mission (M) which brings about Vision (V).

A Culture of VMCL

VMCL supports organizational leadership that is based on understanding the essential functions of any system. In practice, this allows for the simplification and communications of an organizational vision and mission that are aligned, and live as a shared mental model across the agents of a system. It also facilitates focus on what matters most, especially when things get confusing, and aligns every organizational act and actor to the stated mission/vision. Most importantly, VMCL creates organizational agility, by leveraging human behavior and culture towards adaptation.

When leaders focus on the agents being systems thinkers and the simple rules being VMCL, their organizations will survive and thrive as agile and adaptive organizations in an ever-changing marketplace.

If Wells Fargo was an organization of systems thinkers, individual employees would likely call into question the sales metrics that were misaligned with the organization's established vision statement, or the fraudulent actions of their colleagues to meet such goals.

VMCL (vision, mission, capacity, learning) identifies four functions innate to every organization and explains how to leverage these functions to create a learning organization that most efficiently achieves the purpose of its members. This model explains how to create an inspiring vision that depicts a measurable future goal state along with a mission that explains the repeated steps that must be taken to achieve that vision. It also addresses ways to build capacity to do the mission and how to ensure all functions are characterized by continuous learning. As complex adaptive systems, all organizations must continuously build mental models of themselves and their constituent systems and test these models against the real world, using the feedback to evolve them to better approximate reality.

As our world and our institutions become ever more complex, it is incumbent upon all who work within organizational systems and policy efforts to appreciate and leverage insights from complexity science and systems thinking to understand and navigate the cross-cutting systems in which organizational change and learning occurs. This relevance of complexity and systems thinking—particularly understanding how simple rules can lead to complex phenomena—for organizational purposes will only increase over time. It is hoped that this increased understanding of the four functions of organizations as complex adaptive systems will yield better, innovative and effective solutions to our most impenetrable problems, and ultimately, improve the human condition.

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