

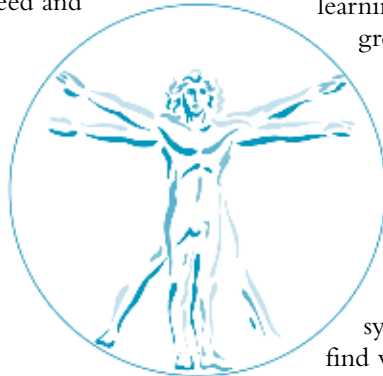


ORGANIZATIONS AS LIVING SYSTEMS: LESSONS FROM HUMAN PHYSIOLOGY

BY MANOJ PAWAR

There was a period when the view of organizations as mechanistic entities served us well and led to significant increases in production. From the time of Henry Ford through the remainder of the Industrial Age, organizations benefited from the learning gained from this perspective. Today, however, the speed and complexity of the business environment has forced organizations to take a different approach. Indeed, those that wish to thrive must be able to adapt to changing conditions, similar to how living organisms evolve in response to environmental changes.

The concept of organizations as living systems is not new. Extensive work, particularly in the area of systems thinking, has brought this perspective into the limelight. By exploring some of the more elegant biological models from our own human physiology, we can gain insight and generate “new” ideas for managing our enterprises. This article will consider five different processes from human biology and will propose practical ways in which the characteristics of these models may have applications for organizations. In addition, I offer questions for further dialogue as a foundation for further learning in teams.



Neural Networks

In the human brain, intelligence and learning are closely related to the number and types of interconnections between neurons. As new learning takes place, connections are modified to incorporate new intelligence. In addition, the more a particular

learning is reinforced, the greater the strength of the connections between key neurons.

Margaret Wheatley observes that, to foster greater health for a living system, we need to find ways to “... connect it to more of itself” (Margaret J. Wheatley, *Finding Our Way: Leadership for an Uncertain Time*, Berrett-Koehler Publishers, Inc., 2005). The implication for organizations is that collective organizational intelligence, as well as the speed of organizational learning, is directly related to the number of interconnections among the members of that group and with outside entities. As a result, learning in “silos” is less desirable than learning that is shared.

Another implication, related to Daniel Goleman’s social intelligence theory, is that shared intelligence will facilitate “high-road” cognitive responses to challenges rather than “low-road” responses that are driven by emotion (Daniel Goleman, *Social Intelligence: The New Science of Human Relationship*, Bantam, 2006). In other words, the automatic stress response of both individuals and organizations can be overridden by higher-level functions, and more thoughtful adaptations can be made. The ability to do so,

however, depends on the degree to which this higher-level awareness exists. In organizations, this capability springs from the power of relationship.

Questions for Dialogue

- How often do we tend to rely on “low-road” or “knee-jerk” responses to events? How do these responses serve us well, and how might they not serve us?
- How well does our organization share new learning and intelligence?
- What synapses (connections) and networks exist, and what connections need to be established?
- How do we currently manage the sensory inputs (internal and external information gleaned) to our organization?
- What space and process currently exists for scanning these inputs?
- As new teams are created or as new individuals enter the organization, how are they connected with the necessary “neural networks” in a purposeful manner?

Endocrine Feedback Loops

The endocrine system provides us with a biological example of how feedback loops are used effectively in the human body. The prototype loop that is most frequently referred to involves the relationship between the pituitary gland (located in the brain) and the thyroid gland. The thyroid gland is responsible for the production of active thyroid hormone, which has a number of effects on metabolism. Patients with an excessive production of thyroid hormone will experience a hypermetabolic state resulting in heat intolerance, sweating, weight loss, rapid heart rate, and other symptoms. On the contrary, as one would expect, an underproduction of

TEAM TIP

At a team retreat, spend several hours reflecting on how to apply the lessons from human physiology outlined in this article.

thyroid hormone causes a slowing down of many functions, resulting in cold intolerance, weight gain, slow heart rate, constipation, hoarseness, and other symptoms.

The secretion of thyroid hormone is regulated by another hormone, thyroid stimulating hormone (TSH), produced by the pituitary gland. The pituitary gland “senses” the amount of circulating thyroid hormone and, if it is low, increases the amount of TSH produced, thus sending a signal to the thyroid to produce more. Conversely, if excessive thyroid hormone is sensed, then a reduced amount of TSH is produced, sending a signal to the thyroid gland to reduce production. Feedback loops such as this, as well as more complex ones, are numerous in the body. Blood pressure regulation is another example that relies on a number of interrelated loops.

For organizations, systems thinking tools and approaches are a natural way to adapt these models for practical use. Organizations with a results orientation, and those with a focus on continuous process improvement, are likely already using these tools. However, even if an organization is not involved in this work or does not have a systems-based approach designed into its processes from the start, there are practical opportunities to begin doing so immediately. Ensuring that up-regulation or down-regulation of processes takes place based on the results achieved and aligning resource allocation with the up- and down-regulation is an achievable first step for many teams.

Questions for Dialogue

- What are the most essential core processes for your team or organization, and how do you currently examine and adapt to the results of those processes?
- What feedback loops currently exist in your organization, and what loops should exist but do not?
- How does up-regulation or down-regulation occur in your organization based on value and results?
- How is the process of resource allocation consciously tied into these feedback loops?

Immunologic Memory and Modulation

The immune system has the task of protecting our bodies by attacking external threats (infections), while at the same time, not mistakenly attacking parts of the body or potentially beneficial processes. In order to do so, our immune systems develop an acute awareness of what is “self” and what is “non-self,” typically by identifying and recognizing the types of proteins and other molecules present on cell surfaces. Similarly, when the immune system encounters new threats, such as happens with a bacterial or viral infection, the system is capable of “learning” by developing the ability to “recognize” the characteristic proteins on the surface of these invaders.

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The ability to re-create the necessary antibodies that are specific for these external threats remains in place as a sort of “immunologic memory” and is the reason why immunizations work to protect us against diseases.

Organizations, too, can learn from this immunologic model. By developing a keen awareness of “self” versus “non-self” through purposefully eliciting shared values, purpose, and meaning, organizations foster a strong sense of cultural identity. When a company achieves this level of clarity, it establishes high levels of engagement and a strong foundation for shared learning. Along these lines, as an organization becomes clear about its self-identify, it improves its ability to identify and recruit new talent with shared purpose and values.

The aspect of “immunologic memory” has some interesting lessons for organizations as well. When one part of the body successfully fights off an infection, the knowledge of that particular event does not remain local. Instead, it is shared throughout the immune system. Similarly, organiza-

tions would do well to ensure that organizational learning and memory are not kept local. Rather, they must exist in a widely distributed nature, so that they can maintain the ability to rapidly identify and resist similar threats in the future. The body uses multiple messengers to disseminate this knowledge (mediators, antibodies, and other modes of cellular communication discussed later), and organizations should consider doing the same.

Cancer cells provide a unique situation for the immune system. As cells reproduce, “mistakes,” referred to as mutations, often occur. When mutations take place, the immune system is involved in identifying the abnormal cells as “non-self” and destroying them quickly and rapidly. On occasion, however, when abnormal cells escape this mechanism, they go on to multiply and spread out of control, depleting resources and interfering with normal processes essential to life. We refer to such a malignant process as “cancer.” On occasion, organizations may encounter situations where sub-cultures or teams may act in ways that threaten the life of the organization, even depleting resources disproportionately. In these situations, a healthy “organizational immune system” would identify and adapt to stop the abnormal and destructive growth process.

Occasionally, mutations take place that actually provide survival benefits. These sorts of subtle mutations allow us to evolve and adapt. For example, the mutation involved in sickle-cell anemia provides a survival benefit in areas where malaria is widespread. For organizations, this implies recognizing that sometimes disruptive innovations take place and that, even though these novelties may initially be perceived as “non-self,” the adaptive benefits they may confer should be recognized and assimilated rapidly.

Question for Dialogue

- What is the core purpose of your organization or team?
- How aware are we when “non-self” destructive behaviors, mismatched values, mismatched goals, or mismatched purposes are at play?

How quickly do we recognize and act when these arise?

- How rapidly do we currently sense and adapt to threats? What space have leaders created for this purpose? How does this process currently take place?
- How do we deal with innovation, especially when disruptive innovation arises (“adaptive mutations”)?
- How has “malignancy” harmed your organization? In these situations, what degree of resource depletion, uncontrolled growth, and interference with core processes have occurred as a result?
- How would we describe our own “organizational immune system”? How does local knowledge get distributed widely so that it’s assimilated into organizational memory?

Cellular Turnover, Rejuvenation, and Replenishment

The human body is in a constant state of renewal. Cells are destroyed and replaced when necessary, as the body is aware of stagnancy. The cells of your body today are not the cells that were there a year ago, and thus, the physical “you” today is not the same physical “you” from the past. Of course, “you” as a whole do retain your identity, sense of self-awareness, purpose, and values in the midst of all this constant reinvention.

For organizations, the implication is that constant renewal and “reinvention” is a necessary component for success. At the same time, the organization must retain ongoing awareness of core purposes, shared values, meaning, and other things that create a sense of organizational identity. Without the ability to continuously renew and reinvent, an organization loses its ability to adapt to changing conditions. Leaders must be attuned to this important process as worthy of ongoing attention.

Questions for Dialogue

- What areas of your organization are at risk for stagnancy? What signals are present?
- How does your organization currently take purposeful steps to re-

invent processes?

- In what ways has your organization evolved as a result of continuous reinvention? How have core purpose, shared vision, and shared values changed, and how have they remained the same?

Cellular Communication

Cells communicate in a multiplicity of ways. Mediators, when secreted by cells, serve as signals to other cells and systems throughout the body. Cellular communication travels through multiple pathways and has redundancy built into it.

For example, when the body is under stress, it sends messages to multiple systems to react quickly to perceived threats. These same messages can also have unintended consequences in negative effects on the immune system, digestion, and learning.

Similarly, the messages sent by leaders and throughout organizations must take into consideration both intended and unintended consequences. A sense of urgency, for example, may be important in order to stimulate change, but organizations that find themselves stuck in this frame of reference for too long or in excess may find it difficult to foster learning and innovation. Consequently, leaders must develop a heightened degree of social awareness to assess the impact of messages that permeate the ranks.

Questions for Dialogue

- What modes of communication are used most often in your organization?
- How are your communications achieving intended consequences?
- What unintended consequences have you seen as a result?
- What level of social awareness exists within your organization? How might this be enhanced?

Conclusion

Living models have parallels in organizations, when one considers organizations as living systems. Five examples from human physiology, in particular, point toward potential ways

to enhance the adaptability of organizations. These examples, along with the prescriptions they suggest, include:

- **Neural Networks**—enhance the number of interconnections within the organization, as well as between the organization and the larger system within which it exists.
- **Endocrine Feedback Loops**—ensure that the feedback loops relevant to an organization are up-regulated or down-regulated based on results, and that learning occurs along the way.
- **Immunologic Memory and Modulation**—learning from one area of an organization must be distributed widely, and organizations must be able to distinguish “self” from “non-self” in the context of shared purpose, vision, and values while at the same time allowing for “adaptive mutations” (disruptive innovation).
- **Cellular Turnover, Rejuvenation, and Replenishment**—continuous reinvention is necessary for organizations to adapt effectively.
- **Cellular Communication**—modes of communication within organizations can have both intended (adaptive) and unintended (non-adaptive) consequences, and a certain degree of social awareness must exist among leaders in order to achieve the right amount of impact without harming the organization.

The ability to adapt is one of the critical success factors for organizations existing in the complex, rapidly changing environments of today. The examples of ways in which the human body adapts can provide leaders with a framework with which to foster adaptability for their own organizations, while also laying a foundation for sustainability. ■

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