

Lessons and Observations on Change in Large Organizational Systems

Observations made in large systems are based on those observations made as an internal improvement and strategist. The assumptions made in this context are from personal experiences and observations of those individuals responsible for the same system. Others may have differing opinions as to the specifics of the observations and thoughts provided, yet I feel it is important to document and share these observations as at least one perspective on the topic.

Assumptions

As with other models, the consideration of a set of assumptions should be addressed to frame the conversation of the system itself. Therefore, the assumptions presented represent those that have been somewhat persistent throughout my career. Thus, when I try to draw attention to the issues within the system, the assumption suggests a given system:

1. Is in a state of equilibrium.
2. Is in a state in which changes are known and deliberate (random responses to environmental changes will be discussed throughout the text).
3. Conditions are supportive of a normal state for an organic system.
4. Conditions contribute to the minimization of change.
5. Properties account for potentiality and eventuality.
6. Are in a state of transition from potentiality to eventuality (the system is not in entropy)
7. Can remain in a state of equilibrium if not acted upon, internally or externally.
8. Represents reactions to resistance.
9. Sees change as individual or discrete actions.

In the context of this writing, I will focus on workplace systems. A workplace system will be defined as the processes by which individuals transform good, services, or concepts into methods and outputs. Those outputs are aimed at meeting some customer need or requirement within the context of a need.

Equilibrium

Generally, the concept (or assumption) of equilibrium starts from a point of personal experience. Not so much as something understood once experienced, but more from the perspective that something was lost. Being in a state of equilibrium tends to feel normal for most. When walking or standing, a person might not consider themselves in a moment of equilibrium unless that equilibrium is disturbed. Losing one's equilibrium is a much more profound sensation than having that equilibrium in the first place. We seem to personify organic systems from the same perspective. A system in equilibrium does not *feel* abnormal, but a person might easily perceive a system not in equilibrium. The concept of what should seem normal is in some way violated; perception of what should be do not match the perceptions being experienced.

Known Change

The concept of *known change* seems a bit counter intuitive. From one perspective, we can plan changes, execute methods that result in change, and account for changes and outcomes to a reasonable degree. However, we also assume that every change in our system is known and visible. Therefore, the assumption that changes are known, planned, and visible is foundational to managing change in large systems. If not, the system would seem to be subject to random change and appear more chaotic than stable. Speaking strictly from the perspective of someone working in a large, stable system, the system itself is designed for maximum stability.

Resistance

Resistance is generally discussed in different domains as having similar properties. For example, in the domain of physical science, resistance is an assumed property of matter that impedes the flow of electrons from one point to another. A resistance can be the actions of many in opposition to the actions of others. At the individual level, resistance can be the refusal to accept what might be read or told by another. In any or all the possible definitions of resistance, the assumption of resistance in many of these forms can be found in most organizational systems. One could apply the concept of resistance in any number of personal experiences in a stable organizational system.

Normality

Those of us working in large, stable systems seem to create a concrete picture of what *normal* really looks like. So much so that subtle changes to what we consider *normal* are either immediately evident or discounted as unimportant. There is a large body of research regarding the human notion of normal. The underlying psychology of creating and expecting established norms in human systems will not be discussed here. I propose the assumption of normality simply to demonstrate that our perception of what is normal might contribute to instability in the system.

Minimization of Change

Regardless of the nature of the conversation about change itself, those working in large systems appear to work to minimize change. The statement here is more an observation of individual and group reactions to changes the same individual or group did not initiate. Those of us that initiate or become passionate about a certain change tend to want to bring others along, because we see the change as necessary and beneficial to others. From an out-group member

perspective, being presented with change is a completely different experience. Change can be intimidating and scary. Change can create uncertainty and distrust. Therefore, if change is presented by peers, one can expect that change to be met with skepticism and intolerance. Put another way changes I initiate should seem positive to others as being in the best interest of the organization. Changes presented by others are a different story all together.

Potentiality and Eventuality

Outside of the domain of chaos theory, complexity theory, or traditional systems theory, the concepts of potentiality and eventuality occur in work systems as both concepts and observations. Those things we see as a possible future for our processes, our outputs, or even ourselves are likened to the concept of potentiality: that which *might come to be*. The eventuality of those concepts, plans, or desires could be likened to the concept of eventuality: that which *came to be*. In research, these two complementary concepts can be expressed as the hypothesis under consideration and the test outcome. Other domains might consider these as calculated properties of systems, sub-systems, and system components. In either case, the assumption that change comes in the form of potentiality and eventuality is a key component of successful change in an organized system.

Movement between Potentiality and Eventuality

Taken a step further, the assumption that stable systems are in a constant state of movement between potentiality and eventuality can help make sense of the daily experience of working in a complex system. Internal processes continuously produce some sort of output. Energy is spent in the attempt to convert raw materials to finished product. Without the movement between potentiality and eventuality, the system would cease to function. Yet, the appearance of equilibrium creates a sense of normality for the individual. On the surface, the

system appears stable and unchanging. From within, change is represented as a function of conversion of things from one state to another. Changing that which we control is completely acceptable. Changing that which we share with others is a highly negotiated process.

Change between States

The next assumption framing the conversation about change in stable systems is that we see the system in which we work as something incredibly stable unless acted on by some internal or external force. From a human perspective, actions can take the form of physical changes to the workplace, or changes in attitudes within work processes. Changes in population perspectives can also have immeasurable changes on complex systems. When the rules of society change, highly organized systems must change in response or attempt to remain stable in the face of shifting norms. Either can be anxiety provoking, both represent uncertainty, yet appear as a natural part of life.

Resistance as a driver for Change

As previously mentioned, resistance is a property with which most have an appreciation. In the context of this writing, resistance can also be a driver for change. I offer this as a concept for consideration as resistance is generally considered a constant in most domains. However, in the domain of organizational change, we tend to project resistance as a negative outcome. I offer that resistance in the domain of work systems can also be a positive constant.

For example, in the physical science domain, resistance can be reduced by:

1. Reducing the temperature of matter
2. Shortening the distance in the circuit
3. Increasing the diameter of the conduit or transfer medium
4. Changing the material in favor of a more conductive substance

5. Increasing the voltage in the system.

I offer that the same concepts can be applied to organizational change. When facilitating difficult individuals or complex problems, I can find ways to reduce the conceptual temperature of the group. As an office manager, I can shorten the distance of the process or steps in the process to help reduce the concept of resistance between people. Leaders can increase the diameter of the conduit or conductor by opening communications and availability. Group members can change materials by changing the methods of communications, or by introducing a neutral environment in which to meet. Lastly, I can increase the voltage by increasing the power in the system.

In this case, the power is conceptual, or expressed from an organizational perspective. The power of the group leader could be increased. The level of power of the individual process owner can be increased as an increase in the position within the hierarchy. Interpersonal power can be increased by helping the group build interpersonal relationships. One key departure from traditional organizational resistance models: resistance does not equal power. In addition, resistance can be measured in human systems as in electrical, mechanical, or fluid systems.

Change as an Individual or Discrete Action

Following the concept that resistance in complex systems can be measured, measurement in this context is better described as an indicator of individual resistance. If everyone in an organization represents one potential unit of resistance, compounded by that individual's level of personal, positional, or expert power, the consequences of resistance become clear. To continue the simile, if the temperature, medium of transfer, distance between nodes (people) remain constant, one could expect resistance to remain constant or increase depending on the nature of the proposed change. One way to detect the level of internal resistance might be through organization assessment. Individual perspectives on change can be focused on individual

perspectives on a particular change. Climate surveys designed to detect perspectives on change can be augmented by the use of focus groups to bring a specific change or issue to light.

Organization Assessment as an Indicator

I have had the privilege of being a part of the development of several organization assessment approaches. From those developed by the United States Air Force to the President's Quality Award, to the State of Georgia's initial Oglethorpe Award Process each method had its roots in the Baldrige Criteria (ref: <https://www.nist.gov/baldrige>). The Baldrige Criteria has evolved through several iterations over the years yet remains a favorite of mine for in-depth organization assessment and to some extent evaluation. I have no intention of selling any particular method of organization assessment. My only intention here is to suggest that those working in change itself, or wanting to understand methods of evaluating change pick a methodology that suits their needs. In my experience, the framework created by the Baldrige Criteria is as comprehensive and complex as any organization might need, while allowing for organizations at various levels of development a framework in which they might grow and change.

My experience in evaluating organizations based on the framework lead to an interest in organization evaluation methods in general. I used the experience in working with the criteria to help develop evaluation methods for programs within the Air Force Reserve Command. These evaluations further led to an interest in understanding the human components of process improvement and program evaluation. I have also found it useful to explain and share the criteria as a method of focusing organizational change on those areas that prove most valuable to the organization, and those areas that can create the highest magnitude of effects.

Baldrige Criteria	Systems Approach Component	Other criteria Influencer
Leadership	Power	Intent to create a desired outcome
Strategy	Eventuality	The vision of the desired outcome itself
Customers	Potentiality	Meeting customer requirements, exceeding expectations, or increased value to the customer
Measurement, Analysis, and Knowledge Management	Flow	Quantitative and qualitative factors that act as indicators of flow
Workforce	People	Internal and external perceptions of the organization or product as reflected by those choosing to work for the organization
Operations	Process	The physical or intellectual processing of materials through the organization; that which can be directly observed as converting product from a current state to a desired state
Results	Outcomes	Effects of the overall function of the organization, and individuals within the organization

Assessment of the Indicators of Systemic Production

If we start with the basics, it is difficult to know where to start. Each approach to process improvement I have encountered focused on some method by which the organization might know the status of processes, people, plant, product, and policy. I have found that the fundamentals of 5S (ref) can help an organization realize what it has on hand in terms of organization evaluation and assessment. In certain industries, there are standard indicators. In Federal Government, Not-for-Profit, etc., there are fewer. So, the question is: where do I start? How can I start to understand a complex system with set rules, expectations, norms, and practices for measurement or indication? If there is no easy-to-understand approach, the Baldrige Criteria might help an organization with the discovery process. Or, if there is an existing industry

standard of practices and indicators, those should be attended to. However, if in doubt start with the Baldrige Criteria appropriate for the sector of practice.

Detect, Describe and Determine Indicators of the Current State

Having worked in a federal system for the majority of my career, the concept of measurement is pervasive in this complex system. I offer that before one decides to measure, one decide on an indicator. I say this because even though we might follow a philosophy of that which can be measured can be accomplished, for many systems or processes there are no valid or appropriate *measures*. However, in most cases there might be *indicators*. The distinction here is subtle, but important. I have spent a great deal of time explaining the difference between the two concepts. In my experience, some use the terms interchangeably, while others disregard the concept of indication as a construct for measurement and evaluation.

In this context, the *potentiality* is represented by the current formal state in its optimal form. Here, we consider the existence of the full spectrum of possible outcomes. The eventuality is realized *at the moment* the choices made by organization leadership is achieved through a series of sustained moments in the organization's existence. However, between the two concepts exists the uncertainty of the transition itself. Consider that the assumptions made earlier begin to play out. For example, the introduction of change can result in resistance. Not as a causal relationship, but as a natural reaction of an organic system. Changing a system at equilibrium is evident in the system trying to minimize the variable being changed (LeChatlier's principle).

Overcoming change resistance then requires an increase in power or organizational voltage. The potential difference between two points is directly proportionate to the energy applied. In an organizational work system, that same principle seems to apply. In this case, shocking the system – applying high energy at the point of maximum resistance – can have a

significant effect throughout the system. Keep in mind that the power applied to initiate a reaction is inverse to the reversibility of the change. Lastly, understand that there is no real process improvement in a system in equilibrium. There is improvement and change within that system that is in growth.

However, since human systems are not perfect, and chaos theory suggest an “orderly randomness” to things, change in a system of equilibrium must take advantage of randomness present in the system. Those patterns of predictable randomness offer hope that eventuality and potentiality are not always the same.

In the randomness comes opportunity. We can see how the randomness opens windows to touch the equilibrium and attempt to perturb the system such that change might be ignited. From this perspective, we can see changes and systemic changes as the result of either intentional or unintentional outcomes. Here, even the smallest changes can have lasting effects on a stable system. The risk in assuming the small changes are having the intended effects are that those actions may or may not be directly connected to the action taken. The risk here is that outcome vectors can be in several states at the same times: positive and negative, intended and unintended, unknown, or null.

Assessing Organization Systems Touch Points

In determining organizational readiness for change, many of the same properties of physical materials considered optimal for creating change can be seen in organizational systems as well. For example, when attempting changes in steel, the material has to be prepared to be altered. Unlike the example, humans can decide – choose – when and how to change. In assessing readiness for change, there are several touch points. These touch points need not all be

at optimal points, but should be assessed in order to develop an understanding of the approach needed for optimal change.

Touch Point	Quantitative	Qualitative
Temperature	Consistent perspective of organizational function. Internal systems as + or -, High or Low; Beyond standard temperature for the industry or practice. High enough to create an optimal change, but not so high as to create destruction or chaos.	Expressed in terms of experiences of organization temperature. Employee lived experience in the organization as relayed by individual or focus groups.
Pressure	As indicated by organization workers: Distance between actual and optimal performance, output. Beyond standard pressure for the industry or practice	Experiences of pressure to perform, exceeded, alter, or otherwise act in a way not in the best interest of the organization, in line with values, or ethical standards.
Composition	Organization and system demographics, consistency with environment and practice or industry.	The experiences of living in a system or organization not consistent with demographics or environment.
Volatility	Level of uncertainty, complexity, or ambiguity in the environment or industry	Lived experience of organization members living in a complex or ambiguous system to such a degree as to result in personal volatility or willingness to remain.
Current	Flow of energy within a system. Process bottlenecks, information voids, or vacuums.	Observations of the flow of work, communications, interactions, and relationship nodes through the organization
Outcomes	Results of organization efforts,	Evaluation of organization efforts having met organization goals, purpose, or values.

Question: How to make changes in a system or of a system in equilibrium?

Answer: The system must face entropy as an alternative to change; assuming entropy is not a desired state.

However, since human systems are not necessarily perfect, and there might exist an orderly randomness to human systems, change in a system of equilibrium must take advantage of randomness present in the system. Those patterns of predictable randomness offer hope that eventuality and potentiality are not always the same.

So the question remains: how do we make change that lasts, in increments that affect the system without creating enough pain in the system to cause resistance but enough discomfort to prevent reversion?

How do we make change we know we need in our organizations, the change that moves us forward to meet new challenges, while continuing the work necessary to meet today's requirements? How do we improve our place of work or home, while we make improvements? If anyone reading this has ever lived in a home under constant renovation, the concept is quite familiar. In most cases, it is impractical to abandon the current structure or work in order to pursue new ventures or improvements. The choices are never easy, and the resources are always limited. As such, the resources present limits within which we must operate. We accept the current resources and do the best we can within the limits of our capabilities, environments, and will for striving.

That said, there is change we can encourage and foster. There are changes we can make in our own perspective, and possibly the perspectives of others. This is where change can take root. Subtle changes might be the smallest common denominator where change can be initiated. Changes in relationships within a person – personal perceptions and reactions to environmental change – can yield lasting change. Changes can be present without detection. Measurement or indication would be pointless in such cases. Quantitative change in perception seems inappropriate. Qualitative change detection – through the indication of changes in daily lived experiences – might be the first most appropriate method by which change is detected in an organization.

Perhaps the way to look at this issue is similar to organizations in change: change coming from within creates less opportunity for reversion than change from without. Whole species

succeed and fail, but only over the course of several evolutionary cycles. Organizations might not have such cycles. The concept of evolution in organizations tends to be thought of as product innovation.

Change must be realized in increments without ending existence. Organizations do not necessarily replicate themselves and adapt in each new generation. Organizational systems aim to perpetuate and grow themselves. So, how do we change an organization when in equilibrium? While the system is at its most stable, nearly optimal state? Perhaps by changing perception, and thereby changing an organization by its smallest unit of change can we accomplish change as an end state.

Changing Perceptions

I have often encountered those convinced that measurement and indication of a change is the same as indication of overall improvement. At times, this might be an appropriate perception. Incremental improvement can be an indicator of lasting change, small upticks in a pattern might eventually lead to indication of overall lasting change. However, with the ever-present persistence of the possibility of reversion, or complete reversal, can generate incremental improvements in moments.

In my career, I have seen several approaches to creating lasting positive change in organizations. In the beginning, there were simple “quality circles” in which teams would address quality issues in process and product. Groups would gather and at times use production charts or other data to help solve customer problems. I participated in several events, weekly meetings, etc., working with coworkers to take on our bigger issues causing delays in production. We would write an action plan and agree on a common goal. We would chart data to see if the action had the intended effect, and agree to monitor the issue for future issues. The overall goal

was typically to keep the system table. I believe groups still gather for the same purpose. What was done many decades ago still happens today, and in some cases in a much more formal and structured form.

The next version was Total Quality Management (TQM). TQM was more formal than quality circles. TQM took advantage of lessons learned from initial attempts at quality improvement, adding steps in the problem-solving process and process improvement approach. Steps in each method added more rigor to solving and monitoring problems, while adding the necessary components of process improvement. There were more steps in solving problems, and the approach relied heavily on those with education and training in statistical process control, process or product measurement, or interpreting customer requirements into produce and process specifications. The popular name of the approach changed, and with the new version can new requirements. The newer version of process improvement took the shape of Lean with a bit of six sigma principles added. Even more requirements change with the new approach. More documentation was required. Practitioners were required to be certified in a quasi-martial arts belt fashion to indicate a level of training and expertise. The only problem was that in most martial arts systems, students are required to train on the basic skills through those skills appropriate for their respective belts, and during several sessions a week. Unlike a martial arts system, newer forms of process improvement only required one test for each belt, and with the right documentation and course of study served as the method by which a practitioner was granted a title. This inconsistency between physical martial arts training and lean/six sigma (or whatever approach a practitioner might be considered qualified) can lead to practitioners only remembering skills they favored or felt comfortable with, versus all techniques available. In martial arts, students are taught to use their less favored hand/side (right or left) first. The

approach intends to make a martial artist versatile in their use of either side, rather than only using a favored side when needed. Current practices in lean/six sigma do not require a similar approach to maintaining one's certification or 'belt'. Those practitioners that favor less analytical approaches might tend to use more qualitative approaches to solving problems while those more analytical might do the opposite. The bottom line here is that as practitioners evolve in their respective understanding of process improvement, both quantitative and qualitative methods must be employed. If not, the two approaches might work against one another and create knowledge gaps, serving to confuse clear solutions at the expense of time and tangible resources.

The Illusion of Control

It is understandable that creating a step-by-step process by which we might change or improve our organizations provides comfort. In a way, following a step-by-step process helps a practitioner create a sense of accomplishment. The form of the problem-solving approach provides an appearance of proficiency that can be practiced over and over. However, unlike martial arts, the form one learns for their respective belt is not the sole measure of proficiency. In most martial art forms, sparring is also a part of the test of an individual's proficiency and readiness for an increase in belt rank. This is where the structured approach to solving problems or improving processes fails.

On the one hand, following the formula for improvement does not always result in an improvement. While a highly-structured approach helps ensure a practitioner has covered much of what should be considered when making change, improvement, or other process adjustments, as a practitioner I have found the ability to 'spar free-style' while solving problems to be a much better indicator of practitioner capability than simply following prescribed steps in a structured process. Specifically, the following table provides examples of how one might move between

structure and free-style approaches.

Step	Illusion	Solution
Define	Assumes a level of knowledge and understanding such that a reasonable definition of the problem exists.	Assume the definition of the problem is a close assessment of the actual problem. If research of the actual problem is lacking, this could result in wasted time pursuing incorrect assumptions rather than addressing the core issue.
Measure	Assumes the problem as defined has direct indicators that reflect the actual problem.	Create a common platform for user-friendly analytics that non-analysts can use or be supported by dedicated analysts.
Improve	Assumes that change equals improvement. Solving a problem is not improvement. Consider effecting how customer requirements are collected and converted into system requirements, what efficient and effective might look like, and efforts to simplify or change outputs.	Create and sustain a definition of <i>improvement</i> for the organization. Consider movement away from one state and towards a more desired state.
Control	Assumes we are <i>fully in control</i> of the problem.	Recognize factors of influence that affect the process. Use multivariate techniques to evaluate factor influence and work within those waves of influence.

The lesson to be considered in the assumptions of DMAIC is that assuming all steps have definable and bounded properties can lead to wasted time and other resources in pursuit of solutions to the wrong node of a problem.

In retrospect, changes in the names of approaches to product or process improvement brought other changes as well. Each new approach to improvement brought an updated or new language, methods, and requirements for sub-steps in improvement processes. Most recently, components of Lean were added to traditional Six Sigma approaches. Included in the melding of

approaches and underlying assumptions of each came new requirements. Requirements included more documentation, increased measurement requirements, and practitioners certified to perform such tasks. Missing was the training in how to collect and analyze data – qualitative and quantitative – past rudimentary charting and basic descriptive statistics.

The illusion of control suggested that our involvement or awareness of an issue equates to control of that issue. Where DMAIC assumes control, humans in organizations tend to revert. Organic systems require intent, aim, and purpose to achieve a new state of equilibrium. In addition, humans adapt to, or adopt change as individuals. Very few might approach change with the same perspective.

Not all change is improvement, and all improvement requires change. In most cases, I believe organizations see change and improvement as being similar. From my experiences, those efforts generally considered improvements are simply changes made in the hopes of creating the perception of improvements. This is where the art of process improvement and organizational change can get tricky. We can't really make improvement without change. We can't really call something an improvement without knowledge that the change we propose or create will actually result in an improved condition. Yet, that which we are trying to improve exists beyond some standard or measure. Therefore, improvement exists as a change for the better. From an individual or organizational perspective.

In addition, improvement does not mean creating a positive outcome in terms of change. For example: an organization can choose to downsize and improve profits, yet the act of downsizing can have significant negative effects. Here, I propose a different set of terms for improvement: consider a departure from the concepts that change, and improvement are somehow interconnected. Consider instead a scoping of individual or organizational desires that

result in positive, lasting outcomes. Consider that while we live in a competitive culture, and that we consider healthy competition a positive circumstance, competition at all costs - *costs us all*.

When we look for opportunities for improvement, we must look at the long-term loss or gains to be expected to mitigate the negative effects of a short-term solution.

Change on an Individual Level

Like atoms and matter, change requires individual components of the system to undergo some form of transformation. As systemic change requires the system of people to change, change must be reflected at the individual level. From a human perspective, change is a choice made because of a drive, or a pull. On the other hand, an individual can choose not to accept the change thereby deciding to leave the system in some way. The effects of the decision can be immediate or realized over time. Choosing not to accept the change creates a point of potential reversion within the system. Therefore, evaluating individual readiness for change becomes a critical component of the approach to creating the change itself. Considering the internal and human components of change, and the organization's overall readiness for change, the two must be somewhat aligned to support systemic change. Evaluating the gaps between overall individual readiness and preparedness for change vice the organization's drive to change can help evaluate initiatives in terms of viability, expense, and likelihood of success. For example, sampling the individuals in an organization to gauge readiness for change could provide the capability to balance the rate of change desired with the human capacity and willingness to accept the proposed change.

To attempt a best-case evaluation of readiness for change, two perspectives should be considered. Individual readiness for change might consist of attitudes, perceptions and protective factors that help the individual feel resilient to change. If these factors are not present, resistance

to change can create a potential for reversion. Next, small group readiness for change needs to be addressed. This includes group discussion and training in preparation for change. As indicators, what customs, language, icons, symbols, or group behaviors might need to change? From the organizational perspective, leadership messaging and presence can help perpetuate a positive outcome to change efforts. Leaders are responsible for ensuring the need for change is clearly articulated, changes in policies in support of change are prepared and communicated, and that the system itself has set the stage for successful change. As an expected outcome, leaders need to communicate and prepare the physical plant, policies, processes, and of course people for leading successful change efforts. In closing, this effort of creating an open letter to those attempting change (regardless of the level or magnitude of change) can act as a touchpoint for the realities of attempting to improve one's organization.