

Jeffrey Saltzman's Blog

Enhancing Organizational Performance

Organization Entropy

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Organized systems want to operate with the lowest level of energy expenditure possible; it seems to be the natural state not only of living organisms but of our human organizational creations as well. Some animals, for instance, are nocturnal in order to conserve energy and not exhaust themselves during the hot part of the day.

Other animals follow strategies that allow them to pass through what would be tough times by hibernating through them. These “procedures” that the animals follow are strategies to help them cope with their environment.

Human organizations as well put into place rules and procedures by which they are going to operate to help them cope with their environment. The purpose of these rules is to allow the organization to make decisions using “standard operating procedures” as a guideline and hence remove from the organization the need to “think” about the decisions being made. For an organization to think, time and resources are required, an expenditure of energy.

But removing the need to “think” about some decisions carries with it an inherent risk – the risk of mediocrity or worse, the risk of extinction. In order to make decisions in a routine fashion, organizations try to come up with a solution that prevents the worst case scenario, works in most situations, fits the largest number of people, in the largest number of circumstances. I think though that organizations often make up rules for the smallest part of the distribution those at the bottom tail end of the distribution.

It has been shown time and again that for a given behavior within an organization that a normal distribution of that behavior will occur. For instance some people will never take sick days, other will take a few each year (when they are sick) and a small percentage will find any reason (a sniffle, a headache, the feeling of getting sick) to avoid coming to work.

Organizations have a tendency to count, it is easy. Here is the number of sick days you are allowed to take, rather than creating a rule that says if you are sick stay home, if you are well, come to work – and then manage the people who abuse the system. Are the rules that the organization puts into place for the average person within the organization or for those at the bottom tail of the distribution? Interestingly, organizations will espouse the one rule as policy, here are your number of sick days, then operate according to the other. It becomes a way of saying “gotcha” for those that abuse the system, but it actually shows a lack of respect for the majority and a lack of desire to inject energy into organizational decision making, the kind of energy needed to deal with those outside of acceptable parameters.

For any circumstance that is outside of the range of responses that the organization has based its procedures upon, you run the risk of the decision not being optimal for that situation or the particular person. Yet many organizations slavishly apply these “solutions” to everyone. The outcome of that is to force standard or average solutions on potentially non-average circumstances. As organizations grow they adopt more of these solutions to help handle the increased number of decisions that need to be made. Bureaucracy is a form of organizational entropy.

In organizations where management is not working harmoniously these solutions can be a defense mechanism,

allowing feuding managers to avoid interacting with each other. By having a standard set of rules we don't have to talk, to engage, we can simply let the organization run itself.

For living organisms, when a non-average, out of range situation occurs, disrupting the routine, there is the potential for great risk, including potential extinction. Will the Polar Bear now faced with global warming be able to cope with the lack of ice flows at the North Pole? Ice flows that "procedure" says are used to hunt seals from? Can the Polar Bear now adapt to a non-average environment one that is out of its range of experience, or will it continue to try to apply standard operating procedure and face possible extinction?

Here is an assumption about people at work. I have yet to see any evidence that contradicts this assumption and have seen much evidence that supports it. In general most employees want to do a good job at work. There is a small portion of employees that do not fit this statement and unfortunately organizations generally create rules for this subset rather than the majority. They manage for the exception. Isn't it ironic that the 'average' person wants to do a good job and yet our organizations create procedures, not to deal with the average, but to deal with the outliers, the exceptions? These rules are then often indiscriminately applied to everyone. Does that mean that our organizations are less fit than their natural counterparts? Are we less or more resilient when the normal situation shifts?

Humans of course are only doing what comes naturally to them. In order to make decision making easier we have a tendency to categorize people into groups, to create stereotypes. These stereotypes are not only often wrong; they do a tremendous injustice to those who have been categorized. Categorization is a way for a person to use less energy, not to have to think about the decisions being made. This behavior at the individual level will at best lead to mediocrity or potentially bigotry as well as missed opportunities to enjoy the rich diversity of the human state of being. Organizations made up of human beings with their frailties make the same mistake; they paint with a broad brush.

A Rabbi that I greatly admire wrote in a recent editorial, "...generalizations are dehumanizing. The most amazing and indisputable characteristic about our humanness is that each of us is unique....Sameness is a delusion. Sameness is contrary to nature and destructive of the human spirit." He speaks of the same human spirit that organizations need to tap into to unlock their potential. What can be done in an organization to avoid this pitfall?

First let's take a lesson from state-of-the-art manufacturing. Mass customization allows a consumer to tailor a product within a given set of parameters to fit their needs. The products instead of sitting on the shelf are manufactured as needed to fill the specific order and the specific need. The use of technology allows the orders to be completed in a fashion and at speed similar to traditionally mass produced items. The days of "you can have it in any color you want as long as that color is black" are rapidly disappearing. This concept of mass customization, I believe can be successfully applied to our organizational policies and practices not just to manufacturing.

Secondly, organizations need to examine what they actually reward. It is well known that organizations get the behavior that they actually reward, not necessarily what they espouse. Supervisors are given recognition rewards to distribute to their people, but they themselves are rewarded for coming in under budget. How do you come in under budget? One way is to not give out the recognition rewards! It is often a very healthy exercise for an organization to review what they are actually rewarding.

Thirdly, we have to be prepared to inject a bit of energy into our organizations to overcome the natural tendency toward organizational entropy. Sometimes it is simply a matter of being willing (and the messenger not being killed) to run non-routine situations up the line. Or even better, with the appropriate people in place, to drive down the decision making process so the non-routine can be handled locally. I have been in many organizations where running something up-the-line, if it happens often is not good for one's career, the classic case of organizational entropy.

Fourth, people learn lessons from having average solutions applied to them and shift towards the center of the distribution in terms of the way they interact and deal with the organization. They, just like the Polar Bear, learn

to deal with the average situation by behaving in a certain way. We need to encourage diversity of behavior and procedure so that when the situation is no longer average we can adapt. I term this the “cautious embrace of variance” and have written more extensively about that elsewhere.

What about all that hard work we do? It certainly feels like we spend a lot of energy here getting things done. Yes, that is true, people work very hard in organizations; but I want to draw a distinction between people in organizations working hard and organizations seeking to operate with low expenditures of energy. Living systems get an “energy” input that creates order, only to begin a run down to lower energy states (disorder) until more energy is put into the system from the outside. Food or fuel of some sort is taken in to re-energize the system. But some animals, to increase their odds of survival fill a niche, unoccupied by others, that may require greater expenditures of short-term energy.

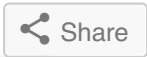
That means that organizations to the extent possible like to run on auto-pilot, without thinking about the “routine” decisions being made. How much can one spend on a meal when you travel? Do you fly coach or business class? Who can pull the lever and stop the production line? Can a salesperson authorize a discount? Who can commit to a client deadline? How many sick days do you get? How many vacation days?

Can organizations learn from nature, those animals that occupy niches that may require more energy use but can lead to greater survival odds? I think so, but they will have to expend some energy to do so.

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November 19, 2009

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Bay Jordan on [November 23, 2009 at 4:59 am](#)

Thank you for a very interesting and thought provoking post.

For those of your readers who are like me and had to look up the word entropy to better understand the term, let me give you the dictionary definition that best helped me to understand. Viz. “Physics: A thermodynamic quantity expressing the unavailability of a system’s thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system.”

Having grasped this I would not disagree with the gist of what you are saying but would disagree with the use of the term, because I would dispute the “unavailability” of the energy. To me the problem is rather the waste of the energy that is available. People have that energy but simply elect not to apply it to the extent they might.

A semantic difference, perhaps, but nevertheless an important one, not because it contradicts any of your points and examples, which make eminent sense, but because it points finger more directly at the leadership, who are too busy managing to inspire. People who focus on managing will simply argue that the fact people are not homogenous necessitates managing diversity and thus, there is no option, but to have rules to create the “normal distribution curve” that facilitates efficiency. Thus they will say that the kind of energy loss you are talking about is inevitable and unavoidable. Thus, despite the validity of your points, there is nothing to impel change. Whereas identifying it as the waste it really is, will at least prompt more more questioning as to what the alternatives are.

↳ Reply



Bill on April 9, 2017 at 1:12 pm

Wow, this is an old conversation to have come across with a google search over 7 years later. For my own purposes I don't entirely agree with this take on entropy. I think that organizational entropy comes largely from organizational culture. If "how we do things around here" doesn't align with the rules (or the intent of those rules) then there will be wasted energy. Wasted energy includes where energy that is not put into the system at all (electing not to apply one's discretionary effort) or where energy is expended in ways that do not serve the larger "organized" effort. I have no idea if there is an ideal culture but I think it needs to be strong enough to enforce helpful norms but not so strong that it can't change and adapt.

↳ Reply



Stephen on April 24, 2017 at 1:50 am

I think you are saying the same thing – but from a different perspective. Organisation rules are there to largely keep an organisation focused on defined activities. That is it reduces randomness (or entropy).

The use of the word entropy in this article is slightly invalid. Entropy is not 'thermal energy'. Entropy is a measure of randomness. The problem with the discussion at hand is the mixing of two definitions of entropy. There is probability-entropy and there is thermodynamic entropy. Mathematically they can be related. The author may have been better off using probability-entropy. However entropy can be considered as randomness within an organisation (i.e. organisational-entropy). In general this includes ideas. The conversion of entropy to benefit is mainly therefore in identifying those ideas and having a process in place to take advantage of them. On the other hand many organisations are innovation-adverse. This means they seek to work in a low-entropy state (by effectively firing or discouraging people who think differently)

Here I include a related reference:

<http://www.sciencedirect.com/science/article/pii/S1877050914001112>

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Stephen Gay on August 5, 2012 at 9:09 pm

3 years later...

I was involved in an interesting discussion in LinkedIn, and someone coined the phrase 'entropy' for organisational decisions.

We postulated that as an organisation increases the entropy increases, and therefore the organisation aims to decrease entropy by rules and procedures.

This causes a loss in profit (which is analogous to available work).

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Jeffrey Saltzman



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