Doing Active Harm: *Patterns of Process, Chaos, And Anti-Process in Information Technology*

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ABSTRACT
Chaos is not the opposite of process. Chaos is neutrality between actual process and ersatz process (i.e. anti-process). Chaos is a natural starting point, and even good processes must be in constant review to prevent unwanted movement in the direction of anti-process.

This paper explains how to identify anti-processes and replace them with appropriate processes or chaos, as the need may require.

Categories and Subject Descriptors
[**Software Process and Workflow**]: Human activities and processes as they relate to software development.

General Terms
Management, Design, Human Factors, Theory.

Keywords
Creativity, Chaos, Process.

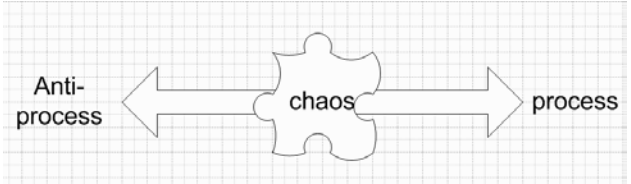
1. Introduction
There is an old joke about the Software Engineering Institute's (SEI) "process maturity model," coined by Watts Humphrey, some years back. The scale was originally defined to be one through five, where one represented "chaos." Most people would have preferred that chaos be represented by a zero, since the prevailing thought is that chaos is nothing. However, chaos was "one," and there was really nothing anyone could do about it once the material was published.

The jokes began to surface that a process maturity level of zero must indicate reckless disregard for the product, while a level of minus one might represent doing active harm to the product. The jokesters were on the right track, as we shall see in the following example: [1]

A Fortune 500 employer's web commerce team received an email stating it would be necessary, in the future, for each person on the team to have a unique account name to use when logging into the Quality Assurance region of the system. As things stood, the message went on to say, there was no way to track who was making changes to a system that was intended to mirror production as closely as possible.

This sounds like a bad problem, but there is actually more to the story that moves it beyond chaos (merely an inability to trace the ID for an author of any one change) and into something much worse. The system administrators were in the habit of handing out old user IDs to requestors. Some of these users' IDs were originally associated with contract programmers who had not worked at the company for as long as two years. Additionally, users frequently exchanged the IDs to find one with the right permissions to accomplish the task's requirements.

2. Anti-Process
We call this type of activity "anti-process." Contrary to the perception of chaos and process residing at opposite ends of the thought continuum, chaos is actually comparatively pleasant neutrality, and the continuum of activity looks much more like this.



The existence of anti-process is well known to the bright crayons of the world. Not everything about process is good, and not every process is for the better. Taste, judgment and experience have their places and are required to be successful with any tool. "Process" is such a tool.

Nonetheless, there are many that would deny the existence of anti-process, perhaps due to concern that their own processes might not measure up under the scrutiny of examination.

2.1 Two questions we must answer

Two questions are seminal to this discussion:

How do we identify anti-process so that we may rid ourselves of it?

Does chaos have a place in business, and if so, how may we make use of it?

2.2 Identifying anti-process

Anti-process has several distinguishing characteristics, most of which are presented in the example. Here is a partial enumeration:

[1] *Anti-process usually masquerades as process.* Note that in the example, the system of doing active harm was far more complex than simply having everyone log on as the super user. Anti-process feels like process.

[2] *Anti-process can usually survive a few fact based questions without giving itself away.* If an auditor were to ask of the situation above "Does more than one person log on as the super user?" the answer would probably be "no" which would be expected since doing otherwise would conflict with well known company policy. Thus the application of this inquiry to the above scenario allows the presence of anti-process to slip under the test question's radar and proceed undetected.

[3] *Anti-process requires the use of just as much (if not more) expertise as process.* In fact, anti-process has the unique ability to stonewall really useful processes because there are usually people who are experts on the use of the anti-processes, and these people are rarely inclined to relinquish their organizational value so easily.

An important corollary of this point is that it is much harder to introduce processes into an organization with strong anti-processes than it is to introduce either process or anti-process into a group that has only chaos. This is further evidence that chaos is neutral.

2.3 Specifics of processes (or anti-processes) in IT

A little over a decade ago, Lou Mazzucchelli was discussing hardware versus software methodologies at a time when the term "software methodology" was only vaguely understood outside the confines of *Dr. Dobb's Journal*. Mazzucchelli stated that hardware methodologies were few in number and generally worked well because they were expensive to develop, and subject to the constraints of semiconductor physics. On the other hand, software methodologies were comparatively numerous (even then) and worked poorly because they were cheap to develop and deploy, and subject to a lack of substantial testing. [2]

Somewhat later, Bjarne Stroustrup suggested in his book *The Design and Evolution of C++* that software methodologies were interesting creatures when one looked at them across the span of project sizes. [3] According to Dr. Stroustrup, if a project were small enough, process was almost irrelevant. If it were terribly large, any factor or combination of factors can be either credited for its success or attributed to its failure, and there would likely to be no way to prove or disprove the assertions of either.

2.4 Well known masques of anti-processes

What are some well known anti-processes? One need not look far. Almost any methodology claiming to be universal is suspect and, at the very least, likely to contain many anti-process elements.

Element	Type 1	Type 2
Organizational tools	Meeting.	Review of the org-chart.
Signatures	Allow deviations from normal procedure.	Demonstrate procedure was followed.
Accountability	Diffuse, decided after the fact.	Associated with roles, evident before work begins.

2.4.1 Organizational Tools

More than one scholar of industry has noted the danger of allowing anyone to call a meeting, and allowing meetings to proceed without agendas. Meetings are expensive, slow, and frequently directionless. They are also common, and sometimes necessary.

Meetings become a hazardous type of anti-process when they move from the background to the foreground. For example, physicians and attorneys have calendars booked with meetings because their actual unit of work *is* the meeting. Too frequently, those of us in basic white-collar industries fill our calendars with meetings, just prior to our complaint that there is no time left to "do the work." In a perfectly healthy organization, the schedule of work to be done would fill the calendar, and meetings would take place in the gaps.

There are considerably fewer organizations than there used to be where truly top down authority flourishes. As we have learned from history and the military, authority must be balanced against accountability and responsibility, two concepts of high maturity. At the same

time, it is worth noting that when organizations get into trouble, they frequently turn to authoritarian means.

Healthy systems of authority rely on demonstrated expertise. Successful managers in such systems usually surround themselves with appropriate and trusted experts whose opinions are sought and taken into account. Career advancement is a product of both demonstrating competency and trusting others. Contrary to what those inexperienced with authority might think, micro-management is not a part of a system where trust is important.

Of course, unhealthy organizations frequently turn to false authoritarian schemes like "Performance Management." [4] Performance Management is a term frequently associated with the so-called "GE model," wherein some percentage of poor performers is eliminated each year, and this selection is made by the managers. Ergo, the term "performance management."

Unfortunately, Performance Management does nothing to develop the people who stay, leaving managers and leaders to treat the abilities of these remaining workers like some type of immutable soul for which they bear no accountability or responsibility.

2.4.2 Signatures

There is no business system other than the sole proprietorship that does not require the use of approvals. As an approval tool, signatures may be used for many purposes. The most common example of this may be the check-and-balance aspect of requiring two signatures on cheques over a certain amount.

Let us consider signatures as a process tool. A signature is generally required for changing the state of things, but its effect is usually one of two disparate scenarios: either the signature guarantees the appropriate processes were followed, or it guarantees the signer is willing to underwrite an exception to the process.

The meaning of signatures is not always what it appears to be. Consider a doctor's signature on a prescription for medicine. On the surface, it would appear to be an endorsement indicating the medicine has been properly prescribed. However, it actually serves as a certification that allows a person to acquire medicine they cannot buy for themselves. In other words, normal process (restrictions on the ability to obtain the medicine) has been circumvented. It is important for all types of organizations to know the difference.

For companies with strong, useful processes, most of the signatures provide assurance that steps relevant to the process are being appropriately addressed. A project cannot move from requirements gathering to the design phase unless signatures are acquired indicating the completion of the analysis.

In companies without strong processes, projects drift along from phase to phase with only the calendar to distinguish the project's state. Signatures are instead associated with "sign offs" which usually only serve to indicate someone in the organization is taking responsibility for circumventing procedures.

Note that in either case, process or anti-process, the signatories have "something to do." Whether they are doing something good for the organization or not is a judgment made by the marketplace.

2.4.3 Accountability

Accountability is something of a dirty word in a culture that so easily embraces victimization. Our social and corporate culture is frequently the best of breed in this arena, thus it is unusually adept at figuring out who-besides-me is responsible. This loss of accountability has lapsed into the activity we now know as "blamestorming," courtesy of the humor of Scott Adams in his *Dilbert* cartoon strip.

One of the more interesting things to note is that assigning or diffusing accountability is largely reserved for association with systems where accountability is not decided in advance. As the saying goes, if you know the answer, you do not need to do the research.

2.5 The perils of consensus and anti-process

As the astute reader may have guessed, the point of view shown in column one of the table above encompasses the types of behavior most commonly associated with consensus. Consensus can become a synonym for several damning organizational woes:

- Abdication of management responsibility.
- Confusing mutual agreement with being correct.
- Diluting the voices of experience and objectivity.

And most importantly…

- Gradual loss of the ability to make a decision, or embrace confidence in the decisions being made.

Let us take some time to inspect each of these woes before we combine the lessons to be learned with what we know about process and anti-process.

2.5.1 Abdication of management responsibility

The only good reason to put people in management is a confidence in the decision-making skills and leadership abilities of the individuals thus entrusted. In *The Mythical Man Month*, Fred Brooks tells us just about all we need to know regarding the dangers of promoting people to

management as a means of retaining their skills or accommodating a desire for higher pay. Dr. Brooks continues with the observation that, in addition to being removed from their greatest area of skill, these talented people often experience long periods of incompetence in their new roles.

Consensus may have emerged, in part, as a way to further diffuse the responsibility for making decisions in the face of frequent management inadequacy. Consensus also supports the installation of "generic managers," who know nothing about the primary activity of the departments they manage. Many of their employees are frustrated by the abdication of management responsibility, which may lead to pervasive cries of "what does management *do*?" This Teflon coated management makes an appearance only when things go well, and its main function is that of self preservation.

And it is within this venue that we find anti-process. Appropriate delegation and consensus look very much the same on the surface, but delegation is the appropriate separation of "mine" and "yours," whereas consensus is a declaration that everything is "ours."

2.5.2 Confusing agreement with being correct

Consider the following story: There once was an evangelist for object oriented programming who set himself up to fix an ageing billing system with a liberal dose of new technology. Over the course of four years and an equivalent number of tens of millions of dollars, our Elmer Gantry built a large organization in which he found himself at the top. Since the company was not largely familiar with object oriented programming, the entire group was populated by other zealots who were external hires, a few internal transferees, and a few others simply looking for line items on their résumés.

Despite widespread agreement within the organization about the efficacy of object-oriented programming, and the numerous published works and conferences touting the same, the project failed. Near its end, many employees called it the "Ken Starr project," joking that years had passed, millions had been spent, and there were no results.

At no point in our example story did anyone do an objective assessment of whether object oriented programming even played a role with regards to whether the project was possible to complete. The paralysis and inertia associated with consensus behavior did not allow for such a criticism, and dissenters were removed from the project for lack of being team players.

Anti-process was hard at work killing this project. One might say that there is no anti-process like a new process, and many anti-processes make their invasions with the claim that they will replace "chaos," which is the pejorative term for the old and therefore "bad," way of doing things.

2.5.3 Diluting the voices of experience and true knowledge

Leveling the playing field, in and of itself, is a laudable goal for two reasons. If those with experience and status are the only ones being listened to, groups become dull and entrenched. Additionally, it is difficult to employ less experienced (and less costly) workers when the sophistication of the methods and tools being used requires an extraordinary amount of experience. Instead of having no career ladder upward, one has a ladder with no bottom rungs.

However, consensus added to weakened management tends to be an inappropriate application of the "one man, one vote" principle. This is one of the most dangerous anti-processes.

In particular, the decision making system tends to sacrifice accurate risk assessments at the altar of enthusiasm for new technology. No project is at risk from an element or two of new technology, but any project is at risk if it is entirely predicated on unproven technology. As Link Parikh of Parikh Advanced Systems said, "There is really no such thing as a technology strategy. Technology is a response to business needs." [5] Experienced members of the staff know this; often the newcomers do not.

Therefore, consensus puts a drain on true knowledge, for knowledge is often associated with expertise, and expertise is associated with elitism. Anti-process can thereby cloak itself in democratic ideals, and the push for democracy becomes a higher moral good than ensuring the viability of the business enterprise. In large businesses with established product lines, this type of anti-process leads only to slow death by boiled frog syndrome, due in part to the successful marketing of existing products tendency to obscure the need to develop new ones. Unfortunately, it frequently requires experience and insight to innovate.

2.5.4 Learned helplessness; the gradual loss of decision making skills

A culture of consensus can bring about long term degradation of the decision-making skills of all individuals involved. This learned helplessness has a life of its own, and tends to democratize the importance of the decisions until no one knows how to order lunch without taking a poll. Discussions over whether to have a meeting at 11:00 or 11:30 are often taken just as seriously as the content of the meeting.

The consequences for the business are just as serious as those facing the employees. The inherent error of this

culture of consensus makes itself apparent when it is time to act quickly in the face of exigencies such as competition. The problem of "no one knowing how to make a decision" is compounded by an unexpected visit from the dilemmas of "no one knowing who is supposed to make the decision" and "no one in possession of any experience with decision making."

As a result, senior executives, become responsible for making almost all the decision. Because executives are fewer in number, and with more limitations on their time, the decision making process reaches a bottleneck. Here again we see anti-process making an appearance in the need to seek ever higher levels of approval, as well as the procedure for properly obtaining the approvals. There simply becomes no way to move quickly.

In response, many businesses turn to "empowerment." *It is worth noting that no one would need to empower the members of a company unless they were powerless.* And in fact, empowerment is often a type of abdication of management responsibility, which is the first problem mentioned in this list of organizational woes.

3. Is there a place for chaos?

Now that we have beaten certain business activities about the head and shoulders using anti-process as a club, we need to ask if there is a place for chaos. Might it be not so bad after all?

Certainly one of the leading myths of process theology is the idea that all process is good, and anything that doesn't fit the bill is evil. Processes are good and must be written into the corporate canon; creativity is dangerous and *ad hoc* designs must be confined to the occasional brainstorming session. Most of all, processes must be uniformly applied.

It is our contention that this is not the case. In fact, processes are best applied at the top level to divide the corporation into "organs" if you are attracted to the "corporation ⇔ body" analogy. For example, large scale financial matters are best assigned to the CFO's department, where as decisions about whether to purchase seventeen or nineteen inch monitors are best left to the people sitting at the desks these items reside upon.

3.1 A case for chaos

The best case for chaos and self-organization is in Paul Taylor's paper "Ad hoc-itecture." [6] Taylor argues that chaos is an appropriate organizational tool for several types of human activities and, in a sense, not everything needs to be planned to succeed.

Giving the evolution of the Internet as a type of ad hoc-itecture, Taylor points out some of the characteristics that allow an un-designed system of its size to mostly succeed. One of the main characteristics is that the review cycle is terribly short. Changes are immediately apparent to a host of users who approach the problem simultaneously from different angles. The deployment of repairs and fixes shares a similar tendency for rapid turnaround time.

3.2 Applied chaos

In the case of our healthy ideal company, we suggest applying Dr. Stroustrup's observation, and allow the smallest groups to function without much process. Many organizations have chosen to propagate the silo type of organization to the point where analysts, for example, are a part of a group that never actually works together but simply share a supervisor who is also an analyst.

Instead, it would be better to encourage the free interchange of ideas by organizing the employees into small work groups of disparate but necessary skills. By any reasoning of process, *but not anti-process*, it is much more difficult to form good working relationships than it is to acquire job specific skills. Therefore, it is wise to keep the groups together that have successfully self-organized and to assign these teams new projects as projects become available.

3.3 Managing chaos

The section heading may look a little strange, and it might be more appropriate to ask what management, more accustomed to enforcing processes or anti-processes, should do when dealing with chaotic groups of workers. The answer is to reverse the four ills of the consensus organization:

- Take responsibility so workers can act independently when necessary.
- Encourage informed debate so multiple points of view will be heard.
- Make it clear that objective points of view will be heard, and that experience is one route to success in a meritocracy.
- Promote decision making skills, and review both successes and failures to modify the processes in place.

3.3.1 Taking back responsibility

After so much talk over the years about empowerment, this topic may come as a surprise. The mantle of responsibility is not all that pleasant, particularly for those who are unskilled or unfamiliar. Managers should not have to get a subpoena to appear before Congress prior to discovering the buck does indeed stop with them.

A key element in becoming responsible is to cast about for a new model of operations in which input is solicited from all participants, but the manager is clearly the person responsible for the decisions based on this information.

By separating the information gathering from the decision making, one can benefit from both chaos and process. It is important to have a working process for decision making and evaluating the relevancy of data, but it is equally important to tolerate and support quite a bit of chaos when it comes to collecting information.

This is a case where the satisfaction may be of *The Rolling Stones* variety: "You don't always get what you want, but sometimes … you get what you need."

3.3.2 Encourage informed debate

Debate went out of vogue as a school activity some time ago. As a result, many employees have no idea how to present their arguments, and they therefore proceed through life under the mistaken impression that a PowerPoint™ presentation is an acceptable substitute for an explanation.

Managers who seek to encourage worthwhile debate of the issues at hand must first become informed about what constitutes a well-moderated productive conversation. Such classes exist in the curricula of some large companies, but are generally viewed as classes for beginners. As a result, managers are seldom in attendance.

The difference between a "meeting" and a moderated conversation can be startling. Meetings are frequently agenda-free, and the means for deciding when they are over is a glance at the clock. In a moderated conversation, the agenda tells the participants how long they will have to speak, and it is up to them to summarize their points of view into the spaces allotted. The moderated conversation is thus over when the material is presented, and the length of the conversation is chosen to allow for an appropriate presentation of the varying points of view.

The "encouragement" can be as tricky as the debate. Consider the frequency with which employee forums and suggestion systems can collapse. For example, a recent memo at a Fortune 500 company declared,

> "A professional facilitator will be present at the meeting so that you will feel safe discussing your concerns about the new performance management system."

It is doubtful that this statement did much to encourage participation. There is the *tacit* implication that there might be a reason to feel unsafe, and a *tacet* threat that one had best be careful about voicing concerns.

For participation to be rewarded it is not the employees but rather their managers who must be evaluated and rewarded based on the suggestions they elicit from their reports.

For example, it is far from enough to say "We encourage you to give us your feedback." Instead, a clear statement from upper management to middle and lower management that they will be rewarded and held accountable for the participation of their reports is a first step. A second step is the follow up in which one might imagine that lower level managers would be questioned about any non-participation and directed to find out the reasons for reticence and remove them.

3.3.3 Creating and supporting a meritocracy

It is certainly possible to claim that a meritocracy is simply a different type of political system, that it is non-scientific, and complete with all the old ills. It is not entirely possible to refute this claim.

However, in Information Technology there is quite a bit of science that must be cultivated outside the political system of any single organization. "Subject matter experts," a characterization sometimes used to describe workers with a strong inclination toward science, must have a voice in shaping the direction of the company. If not, their voices will remain silent, or they will relocate to pursue other opportunities.

Anti-process frequently makes an appearance in support of meritocracy. Consider the following story, also from a Fortune 500 employer:

With an eye toward providing a dual ladder for advancement, this employer created a type of classification equivalent to the executive rungs. No one was immediately put in these new advanced technical roles, since there had never been any clear visibility of the technical "totem pole."

As various engineers sought the higher tiers, something disturbing became clear. Although the job classifications appeared similar on paper, the technology seats at the executive table were compromised -- No executive scale stock options; no invitations to the offsite executive meetings where most of the decisions about the company's future were made; no ability to sponsor business activities and thus underwrite the risks, and no executive perques.

The salary ceiling had been lifted and that was all. Far from encouraging any controversy or chaos, the only people supported by this system were the least controversial technicians.

What might a meritocracy look like?

To begin with, an organization might consider that not everyone perceives "up the ladder" to be the same direction. As well as the conventional understanding of "up," there are plenty of other meritorious directions: Organizations benefit from the members who wish to move from one task or one technology to another,

gathering a breadth of experience as well as depth. Some members wish to move "inward," in such a way that their value to the organization is as its historian or focal point. In the words of John Milton, "They also serve who only stand and wait."

3.3.4 Returning to decisions and their consequences.

As we noted above, the most dangerous organizational malady associated with consensus is the erosion of decision making skills. Therefore, a return to decision making is probably the most unsettling change for an organization.

The two most severe consequences of decisions are success and failure. "Lessons learned" meetings at project wrap up are common in all organizations. Consider the situation in a culture of consensus: few are even in a position to catalogue the chain of events in a project, let alone understand the subsequent cause and effect. Moreover, the diffuse nature of responsibility leads to a great deal of conciliatory gesturing with regard to projects that die natural or unnatural deaths. Consider this story:

After the company cancelled a project, the project manager sent out a note telling team members he was proud of the work they had done. He went on to say that the project should not be considered a failure and no one should feel bad. He stated that the project had been canceled due to "a change in business direction."

The reason may have even been true. However, no mention was made of the following facts: few projects are canceled because they are on schedule, meeting the business needs, and driving toward completion. The project members were aware of many objections that were raised, and many opportunities to turn things around. However, without decisions no one could take corrective steps until it was too late.

In a corporate culture that can tolerate a bit more chaos, lessons learned meetings can point out problems and suggest changes to make improvements. There can be controversy, and that controversy can stimulate appropriate review of processes.

4. Putting it together: Healthy processes (and chaos) in healthy companies.

It is not all bad. Here is a list that should help identify healthy processes and weed out anti-process.

[1] *Processes should be chosen to reward honesty rather than punish deception.* As Fred Brooks points out, unless there is open communication, people are predisposed to "soften the blow with no real intent to deceive."

[2] *Chaos is not an enemy, just an origin.* Successful management is done by understanding which activities need process and which don't. Anti-process spreads quickly when it is thought to be the Messiah who will lead the path away from chaos.

[3] *Partition activities appropriately.* Separate synthesis from analysis, decision making from information gathering. As an example, remember that estimates are not negotiable, only deliverables.

[4] *Resistance to demonstrable improvements is usually an indication of anti-process.* Chaos offers little resistance to anything, and therein lies its weakness from a management standpoint.

[5] *Management is an activity.* It is active, and all puns aside, managers are actors. The secret to successful IT management may well lie in understanding when to take no action and "get out of the way" of chaos, as much as it lies in enforcing process.

In all cases, vigilant personal responsibility on the part of management and non-management is crucial to the accurate identification of anti-processes and their subsequent removal.

5. REFERENCES

[1] The identities of the sources of the anecdotal examples must remain.

[2] Lou Mazzucchelli, *Computer Design*, August 1991, pp. 25-27.

[3] Bjarne Stroustrup, The Design and Evolution of C++, Addison Wesley, 1995. ISBN 0-201-54330-3

[4] For more information on performance management, turn to the index page on the subject found at www.zigonperf.com/resources/pmnews.html

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[6] Paul Taylor, "Ad hoc-itecture – Perspectives on the 'Big Ball of Mud' from Design Theory," SMT2000, Wollongong, Australia, ISBN 0-7695-0903-7.