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Pains of Growing Your Own PMO:
How Corporate Growth Changes Problems and Solutions
By Alan Cline

It seems to be vogue these days for corporate IT shops to create their own "Corporate Unified Process" to develop software. It is also vogue to build a Project Management Office (PMO), either before their methodology is created (as a way of organizing the people to help them create it) or afterwards (to execute their methodology across the corporation). Unfortunately, two factors increase the odds of failure. First, process engineering includes many counter-intuitive ideas that are often not expected or recognized as necessary for development processes; and, secondly, IT roll-your-own processes frequently strive to be silver bullets, rather than methodologies that must guide a diverse spectrum of different kinds of projects.

If the corporate IT did develop a perfect process for their software, they have won only half the battle, and not even the hardest half. Installing a new development process in an existing culture is difficult because process deployment is both psychological and political. Many good processes fail during the deployment phase because its critics emphasize any minor detail or error it may contain. There are two key rules for ensuring the success of a PMO.

Key rule number one: *Define a methodology (a set of related development processes) customized for the various kinds of projects being done by the corporation.* Consider the development processes for maintenance projects, legacy conversion projects, small projects, large projects, projects with high requirements volatility, new-build projects, and the many other kinds of projects that use different approaches to success.

Key rule number two: *Ensure that the processes are tightly synchronized to the corporate culture in which they are used.* Different development cultures require different solutions to the same problem. A perfect process in one culture is a disaster in another. Worse yet, implementing a new process changes a culture, so the act of deploying what appears to be a great development solution could fail when the culture changes as it absorbs the new approach.

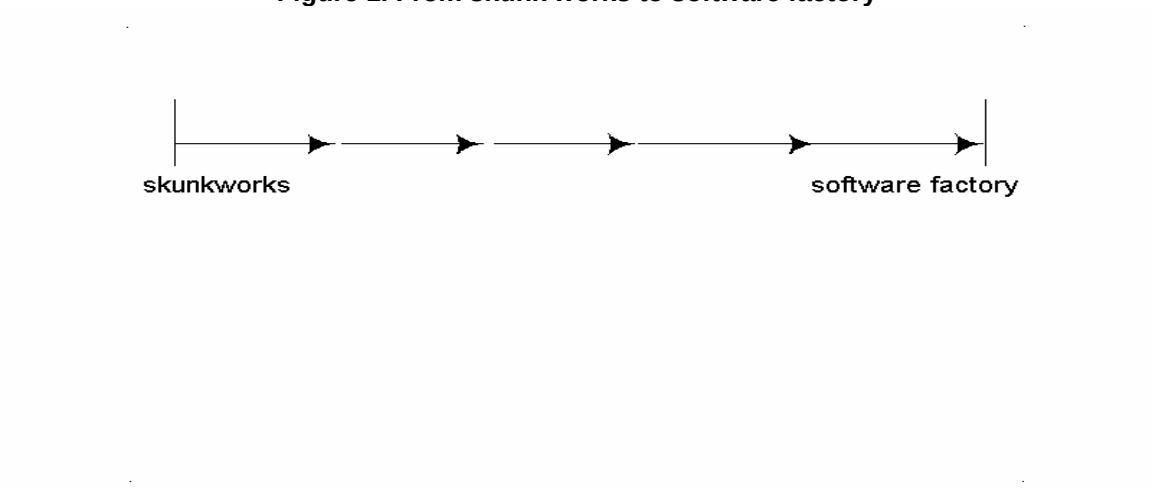
As corporations grow, their culture and problems change, and therefore their solutions change. For example, last summer while watching the movie *The Gangs of New York*, I heard the narrator say (paraphrasing), "In those days [the year 1865], New York City was not really a city, but more a group of gangs, all vying for power." The movie depicted the rise of New York City, but instead of the genesis of a major metropolis, it seemed more as a fall into barbarism. The situation in 19th century New York City reminded me of similar political empires I sometimes see in large corporations—gangs vying for power. The static structure of an organization depends on its dynamic business processes, and its business processes reflect its structure. Processes change as an organization grows or downsizes, and structure and process depend on each other [1]. As an organization evolves, it is important to understand how changes to its processes and structure may cause different kinds of problems, and where to begin looking for solutions to those problems.

Skunk Works and Software Factories

As a metaphor, imagine a spectrum extending from a (hypothetical) very small, personality-dependent and research-oriented software development shop to a large *software factory*, heavy on documentation, metrics, controls and standardization (as shown in Figure 1). The left side of the spectrum, identified as a *skunk works* [2], develops smaller projects over shorter periods of

time than the software factory. The software factory is able to generate large amounts of code and take on projects with massive numbers of developers, testers, documenters, and managers.

Figure 1. From skunk works to software factory



The processes used to manage and run the software factory would be inappropriate overkill if applied to a small few-person development shop. The skunk works shop is more reactive, more experimental, and uses less repeatable processes than the assembly-line approach of a software factory [3]. High-quality projects depend on the personal practices of specific individuals and occur unpredictably. The Software Engineering Institute (SEI) would rate the skunk works as Level 1 on their process maturity scale [4].

On the other side of the spectrum, the software factory, which incorporates training programs, project optimization techniques, process asset libraries, on-going process improvement, and predictable high-quality projects, would be rated at Level 5 by the SEI. The software factory might also include inefficient practices with too much overhead, analysis paralysis, and other factors that contribute to project inertia.

As a skunk works brings in increasingly larger projects, larger teams, more validation techniques, or larger scale management, metrics, or controls, the shop moves toward the software factory end of the spectrum. As more people are employed, more managers are needed, and the structure of the organization changes. Entire teams of developers, testers, and managers in the software factory fill the role played by a single developer/tester of a skunk works. As the skunk works continues to grow, its organizational infrastructure would necessarily be different to support the size and process changes associated with growth.

Significant to this linear spectrum is that if an organization downsizes from software factory to skunk works, it does not simply reverse its path of growth. Actually, a declining organization with massive metrics, controls, planning, and other management overhead is unlikely to fall back to a skunk works organization. The path described on this spectrum is not directly reversible. Much more complicated things happen when an organization grows and declines and the evolutionary path up is not the same as the path down. We need a more involved model of corporate evolution to illustrate that. Rummler & Brache [1] have studied these processes in great detail.

Corporate Irreversibility

Assume a corporation evolves from a startup to a highly profitable business, that it grows and matures. Assume that after time it deteriorates to extinction, either by acquisition, bankruptcy, dissolution, or any other way that a corporate entity dies. Its organizational processes follow a different path on the way down than the one from which it grew. When this double trajectory

occurs in the evolution of a corporation, I refer to this as *corporate hysteresis*, a metaphor borrowed from electrical engineering.

In electrical engineering, hysteresis refers to the property of an electromagnet in that when it is charged, its magnetic energy rises to its maximum magnetic potential, but when the electric current is turned off, the magnetic energy does not drop exactly as it rose. There is a residual magnetism that delays the decrease and retains the energy at an unexpectedly high level. The amount of retention is a physical property of the material that makes up the magnet. Similarly, a corporate organization does not regress along the same path as when it was growing, but follows a different path on the way down. The path it follows depends on the characteristic properties of the organization's processes, structure, and culture. For different phases of a growing or declining organization, a PMO's culture must be built to mesh with the culture of the embedding organization.

In the discussion that follows, I use the term *corporation* when the external context of the company needs emphasis and *organization* when I focus on its internal aspects.

The Four Zones Model

The business problems of a corporation can usually be traced back to where it is on its life cycle of growth or decline. I have identified four zones of a hypothetical corporation. Each zone has different characteristics and problems, and requires a different kind of solution to each of those problems. In particular, this article focuses on IT organizations or companies with sufficiently large software development processes, although the concept can probably be applied to almost any organization. The variables under discussion are the production (the output of an organization), efficiency (the ratio of output to input), time, and size of the organization.

Figure 2 shows a qualitative relationship between production output and efficiency. When the corporation first starts out, its output and efficiency grows, and its state moves along the top curve (Zones 1 and 2). As our mythical corporation evolves, its efficiency slows although its output continues to grow, but more slowly. Eventually it begins to stagnate and fail. As it collapses, its efficiency and output drop drastically, its state moves around the cusp of the curve (Zone 3) and moves along the bottom curve where it continues to decrease output and efficiency (Zones 4). Each corporation has its own rate of time--some may move very slowly, some may move very quickly. Most mature companies remain stable somewhere midway in Zone 2. Each zone is discussed in more detail below.

Of course, an acquisition, merger, or external catastrophe will truncate the corporation's evolution, since the corporation no longer exists as it was known. The new (combined) company will fall somewhere on the hysteresis curve that reflects the combined production, output, and efficiency of the two original companies--a function of the two cultures, processes, and management structures.

Zone 1:The Startup Organization

Zone 1 is the startup zone, typified for a software development shop by technically focused and intense development, eager developers, and a hunger to build and meet personal goals for the sake of the company. Projects are driven more by highly skilled individuals (personality dependent) than by coherent integrated teamwork. Management structure is focused around the project, instead of having a functional or matrix management hierarchy. The staff is just starting out and the team members are working almost independently of each other. The production output is relatively low at first because the company is small; efficiency is low because project management controls are slight and rework is typical. With time (it could be years or months), as the team gels, the efficiency and production rise rapidly. In addition to personality-dependent projects, software development techniques such as Extreme Programming (XP) or Agile Methodologies thrive in these kinds of environments.

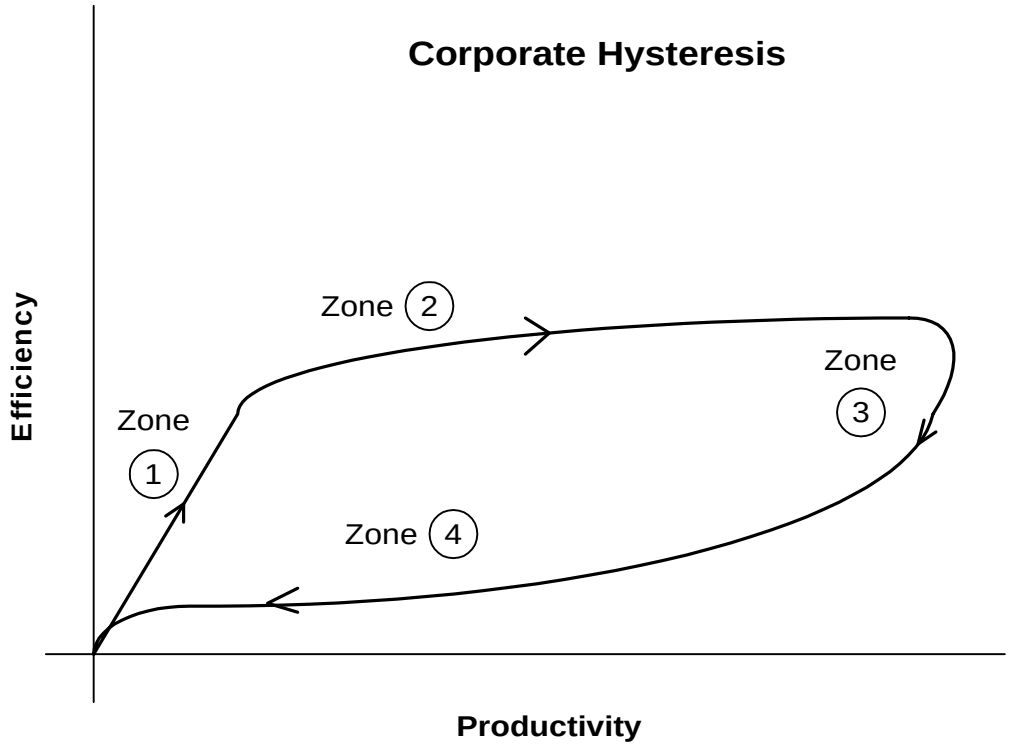


Figure 2. The four zones of the corporate evolutionary cycle and its hysteresis.

The slope of the line in Zone 1 is rather arbitrary, and for this qualitative look, is significant only as relative to the slopes of the curve in other Zones. The roughly 45-degree rise reflects the rapid rise of production over time as the company settles into product development and increasingly more efficient processes.

Problems: Most problems in the Zone 1 organization will center on technical aspects of development, marketing, or finances. Some problems of quality may arise, since the personality-driven project often neglects the larger context needed for risk management, market satisfaction and corporate business value. Marketing problems will arise if the startup corporation does not find its market niche or distinguish itself from its competitors.

Financial problems also abound in the early corporation, but the focus here is on development and process problems, and not the mere lack of money. This evolutionary model is not meant to apply to organizations that did not achieve the necessary financial critical mass to mature. Assuming that the corporation has sufficient financial, marketing, and other internal processes in place, and it has the proper products and procedures of an innovative company to allow it to survive, then it will evolve past the typical attrition that beset most start-ups.

Regardless of the exact nature of the problem, the process and organizational structure must match the size of the organization, as illustrated by the linear spectrum of Figure 1. I have seen organizations that did not change their processes as their project and product demand moved through Zone 1 into Zone 2. They continued in a feature-list mentality, to-do lists grew out of control, miscommunication and inconsistencies between work groups abounded. The idea of predictable projects and on-time delivery quickly became a myth that the developers stopped trying to achieve.

Solutions: Most development problems for Zone 1 organizations can be solved with technical solutions. The staff has little interest in large development methodologies or organizational management. (“You don’t need a blueprint to make a doghouse.”) Consultants and managers can add the most business value to the Zone 1 corporations by providing particular techniques, training, or small-scale efficiencies in either development or marketing. Arguably, a PMO is not needed for this environment because project management is used minimally and formal standards are not needed. Standards are implemented in an over-the-shoulder look at how someone else is doing their work.

A less frequent but major problem results from the evolved growth mentioned above, that is, increased team and project sizes, and communication overhead. Ironically in this case, the solution to Zone 1 problems involve scaling up the organization to larger products and team processes; in short, the solution is to move the organization into Zone 2.

Zone 2: The Maturing Organization

As the corporation’s productivity and efficiency grows, the organization takes on more work, projects become larger, and larger teams are needed. Larger teams require more communication and project management. Communication and project management, while maintaining quality and risk control, adds overhead to the strictly product-oriented development process previously used by the group.

As the company continues to mature, projects and teams tend to become yet larger as the size of the organization grows. With new group processes in place in early Zone 2 organizations, production and efficiency continues to rise, but more slowly--communication processes, metrics, controls, and standards have their own cost to efficiency. The curve begins to flatten; production output increases are slower than in Zone 1 [9]. The time it takes for a corporation or organization to move from the beginning to the end of Zone 2 depends on the management and culture of the organization.

Problems: As the organization grows, more and more hierarchies of control (management) are added; decision-makers get farther and farther up the chain of command from the effective workforce, and standards and company policy play a more important role. Where a Zone 1 upper manager might have interacted directly with a worker before, a directive from a Zone 2 upper manager now must be passed down through several layers of management to that same level of worker. The worker sees less of the big picture and retains a smaller scope of control. Deming reported that upper management affects 85% of all quality, but the workers can affect only 15% of it [6].

The steady pace of organizational growth results in more committees because more interests need to be served (or protected). The standards and committees originally installed to promote consistency result in inertia against quick action. Where Zone 1 or early Zone 2 managers might start task forces (short-term goal-driven action groups), late Zone 2 managers charter control boards (ongoing oversight committees with no definite end goals). Larger groups and more independent working relationships rise within the organization.

Managing the metrics, controls, and standards within a work group adds to the already growing overhead of that organization’s larger project and operational load. The effect is multiplied if each work group (at whatever organizational level) must also cope with the mismatch of disparate policies between work groups. Work that must flow through different work groups get bogged down or bottlenecked as each group tries to execute different policies. Miscommunication, different policies, and different priorities lead to lack of trust between groups doing different things differently. This can cause conflicts, inconsistencies, and turn once-holistic working groups into isolated product or function *silos*.

An organization with many silos, or with managers that have a silo mentality, can produce a slow-down in the workflow between work groups. This is seen as *silo impedance*, a kind of internal resistance or friction to getting the job done (in a non-holistic manner) [1]. Problems with "managing the white space [between hierarchical branches of the org chart]" become prevalent [1].

In many cases, employees are now more concerned with "doing (only) their job" than with the entire concept of product quality or personal value to the company. Bureaucracy and cultural resistance to change become overwhelming as the driving reason for change is forgotten, or worse, takes a back seat to the personal agendas of the managers. Cultural forces against change outweigh alternatives that produce action, and habits or rituals are followed without a clear known reason.

> *Five Wet Monkeys and Cultural Stagnation*. Hargreaves [7] reports an interesting zoo experiment that shows how patterns of habit develop. A group of researchers put five monkeys in a cage with a pole leading to a banana. Of course, the first monkey to see the banana went for it. The pole was rigged to shower all five monkeys when any one of them went up the pole. Monkeys hate to get wet. Eventually, the monkeys learned not to go for the banana.
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> The researchers then replaced one monkey with a new one. He immediately went for the banana, and four other monkeys beat it up because they didn't all want to get wet again. Soon the new monkey learned not to go for the banana. One by one, the monkeys were replaced until there were no original wet monkeys in the cage. If you could ask these dry monkeys why none of them went for the banana, they might cross their arms over their chest, lean back on one leg, and say smugly, "We just don't do things like that around here." Such is the effect of cultural indoctrination.

For corporations in late Zone 2, the organization begins to falter under its own weight. Private agendas and silo mentalities fragment the organization. Fragmentation tends toward stagnation. Stagnation results in losing pace with the always-moving market, and the corporation loses its ability to react quickly enough to market demands.

The effects of the pathological forces within the organization will have changed the management culture such that nothing can be done from inside the organization. At that point the corporation will have lost its ability to resolve its problems from within, which is exactly why it is where it is on the curve. The Not-Invented-Here syndrome is so prevalent that ironically, they think that they can solve all problems themselves. If the organization could have helped itself already, it would not be where it is on the curve.

Solutions: Process improvement solutions and PMO's do well here, particularly for organizations in the early stage of Zone 2. Solutions that revolve around installing good development processes, initial or small-product project management, and setting standards will have increasingly more effect at adding value than technical solutions (although improved technical solutions will continue to improve production).

A good PMO will coordinate, educate, train, and collect these disparate policies, culling out the best for the good of the corporation, and reducing the silo-impedances to a minimum. A PMO, as a high-level organization (reporting to say, the CIO or CTO) can provide consistent standards to eliminate much of the chaos that entails when the majority of people each try to do their job as they see fit.

Larger ("heavier") methodologies that incorporate the context of multiple groups within the organization, previously seen by Zone 1 development groups as too formal or burdensome, are

more acceptable or even required in Zone 2 to coordinate the various subproject goals of different teams. Portfolio management becomes a required skill.

Standards are required to maintain consistency among workers; otherwise inconsistencies can swiftly destroy the project or product as conflicting goals and procedures undermine the project. A mid- to late-Zone 2 organization should develop a PMO to provide direction (at least) to an increasing number of organizational groups and standards within the corporation.

Peters & Waterman [8] reported that no new innovations have occurred for *any organization* of over 250 people, although "organization" can be defined as an internal unit to a larger corporation. To combat the stagnation effects of late Zone 2 organizations, some clever managers regroup their corporation into small Zone 1-type organizations to regain the benefits to be found in Zone 1 organizations.

Zone 3: The Collapsing Organization

Of course, not all organizations follow the path outlined above. It is the evolutionary result of our hypothetical corporation that fails to stabilize in Zone 2 that continues along the hysteresis curve. Without outside help, the organization moves inexorably into Zone 3.

The organizations in Zone 3 are failing. Production and efficiency are dropping dramatically. Internal attempts to solve this problem often backfire. Attempts at restructuring organizational units without redefining production processes increase the deterioration.

Problems: Without external help, such as an organizational or process improvement consultant, or even acquisition, mergers, or other large-scale corporate changes from outside, the company will fall through Zone 3 into Zone 4.

> *The Bouncing Ball* Syndrome. The American Marketing Association [9] once described a phenomenon that resulted from changing the structure of an organization without changing its corresponding processes. I call it the "bouncing ball syndrome", which proceeds like this: As an organization restructures, usually by downsizing for cost cutting and higher productivity, the management fails to change the processes now required for the smaller organization. This kind of restructuring also forces people to play new and sometimes unfamiliar roles, increasing miscommunication and confusion of responsibilities, resulting in a slower productivity upswing. The workers are not sure what their job is, and they are not sure of what their management wants. Sometimes management is not sure of what it wants either because the organization's new strategic direction is in flux, or not yet well defined.
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> Productivity falls drastically during the downsizing efforts as expected, but as workers come up to speed they never quite reach the productivity the company had before restructuring. Management thinks they need to restructure again to get the final bits right, and when they do, productivity temporarily falls again, but the upswing productivity does not climb as high as the previous high. A repeated cycle of restructure and productivity drops begins, with each rise being lower than the previous one. These cycles can continue until the company is out of business. See Figure 3.

I once worked for a company that exhibited the "bouncing ball syndrome". This deadly cycle continued until a competitor acquired my company. The management of the new company put the same person in charge of the acquisition restructuring "because he had restructuring experience". Not surprisingly, the new company went through the same floundering bouncing ball syndrome until it was acquired by yet a third competitor two years later.

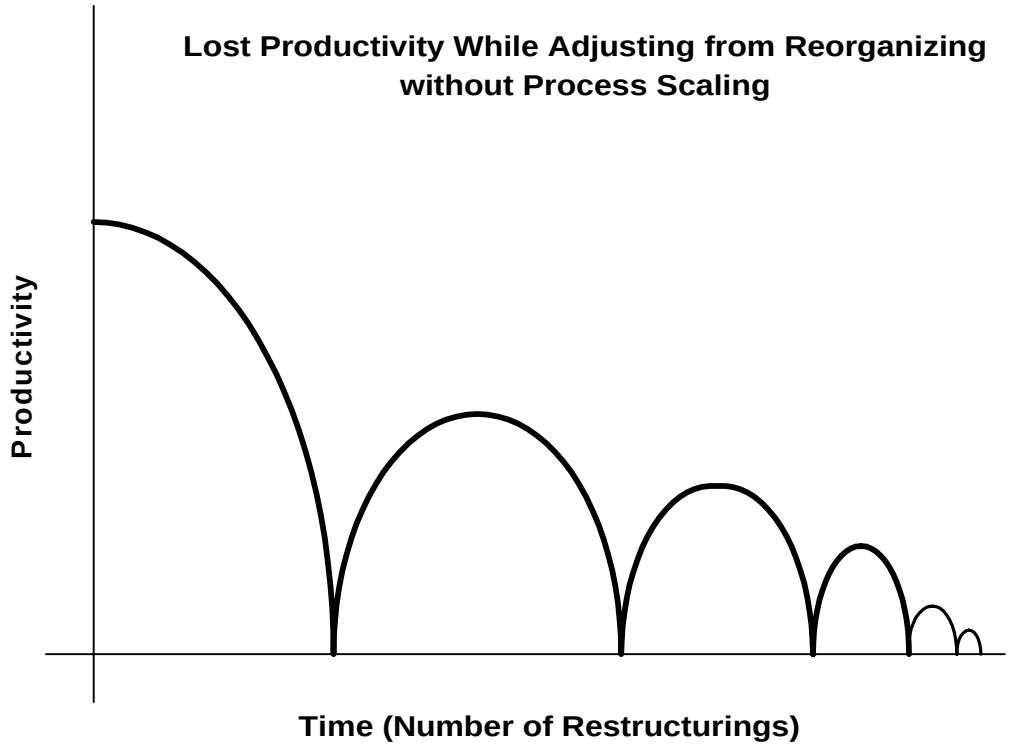

Figure 3. The “Bouncing Ball Syndrome” of incorrect organizational restructuring.

Solutions: Early in Zone 3, solutions are most useful if they focus on organizational structure and its associated processes, particularly with the aim in mind to trim and minimize the organizational overhead. Silos must be integrated and corporate processes redefined to span those silos. Process sponsorship and project prioritization allow management to gain control again.

In late Zone 3, only external solutions will be effective; the internal culture is too embedded and pervasive to allow a solution to be seen from inside. This is evident by the fact that the organization is where it is on the hysteresis curve; it could not get to this point otherwise. Unfortunately, an externally based solution is counterintuitive and unlikely to succeed because most managers of large organizations still want to maintain control. The Not-Invented-Here syndrome becomes a cultural deadlock. Management will often be like a plumbing novice who hires a plumber and then tells the plumber in great detail how to (incorrectly) fix the pipe and rejects solutions proposed by the plumber. A Catch-22 develops: any countercultural statements will be perceived as unrealistic, and any suggested solution will be countercultural.

Zone 4: The Decaying Organization

The company slides toward dissolution. Zone 4 is characterized by large companies that lost their place in the market, or by companies that stagnated and continued to shrink. At some point in Zone 3 or early Zone 4, lack of market response resulted in lower production until their ever-shrinking place in the market could no longer sustain them. They move toward bankruptcy, dissipation, or absorption by another company.

Problems: Often, an unwillingness to change pervades the personnel. Blame is placed on easy excuses, such as recession, pickier customers, or other competitors. Management sees

themselves as running a “cash cow” operation, and choosing deliberately not to innovate so as not to risk damaging that status.

Solution: Consultant solutions at this stage are probably not helpful at all. The culture that allowed the organization to slip into Zone 4 has failed in their other attempts by not heeding external consultants brought in during Zone 3, if indeed any were brought in at all. Zone 4 is characterized by a level of management that wants to have things different but not willing to change.

A Last Hope

There may be hope for the collapsing and decaying organizations of Zone 3 and Zone 4. Thomas Kuhn [10] explains that the more an organization is in crisis, and the greater the pain felt by upper management (or anyone for that matter), the more likely they are open to the idea of change. This force to escape from the crisis (or alleviate the pain) may counteract the inertia of a static non-innovative organizational culture and allow desperate measures to succeed where once they would never have been attempted. How soon management begins to allow change depends on their crisis, their pain threshold, their fear of failure, and how imbued they are to not changing.

Conclusion

As a corporation goes through its evolutionary stages of increased growth, productivity and maturity, it is key to fit the right solution to the current problem. Regardless of the exact nature of the problem, the process and organizational structure must match the size of the organization. Fortunately, successful companies recognize the deterioration of their organization through the various productivity measures available from within and without. By taking active steps to decrease the entropy of their organizations at the right time, they can fend off the deterioration that inevitably comes. Their problems and consequent solutions are defined by where they are in the four-zone cycle of life.

Installing a good PMO at the right time is essential. A good PMO is one that recognizes the needs of the organization to install standards and techniques, and communicates to keep both development and operations vigorous is required.

To return to the opening question: 21st century New York City will not revert back to a group of gangs. It would deteriorate as a whole, its infrastructure becoming more error prone and unresponsive to community needs, until it declines to a different state from which it grew. It will actually fall apart under its own weight. The decline of a city does not follow the same trajectory as its growth, and the same is true for a corporation.

About the Author

Alan Cline is currently Systems Officer of Enterprise Advisory Services and its corporate requirements Center of Excellence at Nationwide Insurance. He has over 25 years of experience in the computing industry. During his profession, he has increasingly been more involved in methodologies and zero-defect software development. Over half of his projects over the last ten years have been completed with zero defects. He has been published several times, speaks to professional groups regularly, and leads other companies to improve their software processes.

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Alan Cline is a Project Management Professional (PMP), a faculty of The Ohio State University Computer Science dept., and has audited in the Sarbanes-Oxley, ISO 9000, and SEI CMM

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