

This article was downloaded by: [Stan Rifkin]

On: 05 April 2013, At: 09:54

Publisher: Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Enterprise Transformation

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/ujet20>

Raising Questions: How Long Does It Take, How Much Does It Cost, and What Will We Have When We Are Done? What We Do Not Know About Enterprise Transformation

Stan Rifkin ^a

^a US Air Force Office of Scientific Research, Arlington, VA, USA

Version of record first published: 16 Mar 2011.

To cite this article: Stan Rifkin (2011): Raising Questions: How Long Does It Take, How Much Does It Cost, and What Will We Have When We Are Done? What We Do Not Know About Enterprise Transformation, Journal of Enterprise Transformation, 1:1, 34-47

To link to this article: <http://dx.doi.org/10.1080/19488289.2011.554961>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

RAISING QUESTIONS: HOW LONG DOES IT TAKE, HOW MUCH DOES IT COST, AND WHAT WILL WE HAVE WHEN WE ARE DONE? WHAT WE DO NOT KNOW ABOUT ENTERPRISE TRANSFORMATION

Stan Rifkin

US Air Force Office of Scientific Research, Arlington, VA, USA

- *Though we speak about transformation, we know little about even the most rudimentary aspects of organizational change. This is less a gap and more of an abyss: we have practically no quantitative information on transformation, except in some cases, an approximation of the total cost. This article is a list of the principal areas of knowledge that we lack and the impact of that lack. The list becomes a research agenda for transformation.*

Keywords Enterprise transformation; Research agenda; Planned change; Contingency framework; Managing transformation as a project; Leadership.

It is difficult to speak about what we do not know, what is unknown to us; and there are few references! The scope of what we do not know about enterprise transformation, no matter how that term is specifically defined, is itself quite broad and unknown. Worse, trying to answer questions about what we can expect to spend to transform enterprises itself appears to be a wicked problem, one that changes as we investigate (Conklin 2005). Still worse, much of what we do know about transformation is anecdotal, personal, idiosyncratic, and comes from “gray-beards,” such as the author. It is not falsifiable, not the stuff of science or engineering. Because it is idiosyncratic it is not (even) coherent, except by serendipity.

The organizing principle of this article, this research agenda, is a series of questions that a practitioner of enterprise transformation would likely ask herself at the beginning of an initiative, during early planning. They are the applied, daily, real-world concerns of anyone who tries to help guide transformation. All of us who practice transformation hope that the answers

The opinions are those of the author and do not necessarily represent the US Department of Defense nor its Components. The US government retains unlimited rights to reproduce and distribute this article.

Address correspondence to Stan Rifkin, US Air Force Office of Scientific Research, 875 No. Randolph St., Arlington, Virginia 22203, USA. E-mail: stan.rifkin@afosr.af.mil

will come from a strong theory base. The purpose of this article is to present the questions and propose a basic science research agenda to address them, therefore the target audience of the article is researchers. So, the questions come from practice and I presuppose that the answers will come from research.

A research agenda is proposed in the form of a list at the end. No claim is made that it is exhaustive or even that the items are at the same level of analysis. The list was generated by formulating the questions that we practitioners pose as we try to implement transformation, so there is no claim of completeness, only of face validity, of being a starting place.

At the beginning of a transform initiative one of the first questions is “What are the steps of transformation?” “What is the sequence of activities we should undertake to define and obtain our new, desired end state?” It is worth noting that the end state may be something continuous, such as continuous learning, rather than something discrete, such as a milestone event. One published set of steps is MIT’s Lean Advancement Initiative Lean Enterprise Model (<http://lean.mit.edu/products/lean-enterprise-model>) (Nightingale 2009), but it could have been any step-by-step, cyclic model, such as IDEAL (<http://www.sei.cmu.edu/library/abstracts/reports/96hb001.cfm>) or (Goetsch and Davis 2006, p. 777).

In order to better understand the diagram we can study a more detailed, publically-available publication (*Transitioning to a Lean Enterprise: A Guide for Leaders* 2000). Now that we have a set of steps, who will perform each and how long will each one take? We note right away that at least in the diagram there are few decision or contingency points, the flow begins at one point (not shown, but inferred) and continues in a cycle, diagrammatically at least with (only) two branch points for “corrective action.” What is the expected number of iterations for those loops, and for the overall loop that begins with Strategic Cycle? Assuming we can answer who will perform each step, how long each one will take, and how many iterations we should plan for, how will we assess the organization’s ability to absorb the transformation we are initiating? And how can we estimate that at the beginning, for planning purposes?

Of course, we ask these questions in a planning sense, but there is also a question of the cost of transformation and then whether the benefit is worth that investment. And while we may seek to organize transformation into a traditional project framework, we also ask whether that is appropriate, whether transformation might not be a different type of project than, say, building construction. This is especially salient because traditional project management tools (e.g., Microsoft Project) do not permit loops or cycles to be explicitly described or planned.

The recent high-point for research into the process of changing organizations was probably in the mid- to late-1980s, when nations were considering whether there was a sustainable advantage to the speed of adaptation to the

exogenous stimuli of disruptive global commerce, high product quality (particularly from Japan), and technological change. Reading scholarly literature of that period leaves one with a sense of optimism that we were on the cusp of understanding the complicated mechanisms of enterprise transformation. Since then there is probably no less optimism but there certainly has been a scarcity of empirical fieldwork that would give a basis for a grounded theory, for example, of actual transformation as it unfolded. I intentionally cite the older works, as they form the basis of optimism about this research agenda.

NEEDED: A CONTINGENCY FRAMEWORK

The two most commonly asked questions about enterprise transformation are probably “How long will it take?” and “How fast can we absorb change? (Because we are in a hurry!)” A contingency framework (Burton and Obel 2003) would suggest that our answers be, “That depends.” On what does it depend? That is the rub, as we can answer notionally (Robertson, Roberts, and Porras 1993; Burke and Litwin 1992)—in practice I think it depends upon how many people’s minds we have to change and how far away from the desired state they are now—but we have almost no data carefully recorded from previous changes to make actual, concrete estimates. Further, we cannot estimate how many meetings it will take, the duration of the initiative, how many teams we need (if we need any), how long it will take individual teams to perform their work, who is required to be involved and to what extent and where in the process. In a word, we do not know our resource requirements. Therefore, we do not know how much it will cost, leaving for the moment whether the benefit would exceed that cost.

HOW IS THE MAGNITUDE OF TRANSFORMATION MEASURED?

Notionally at least, the questions above would depend upon how big of a transformation we are proposing. That is, we would need to know the magnitude. But in what terms would the magnitude be measured? Will this transformation be “small” or “large”? We might suspect that the scale, if one existed, is exponential, as with some other points of reference, such as the Richter magnitude scale for seismic energy (that is, earthquakes) and Mohs scale of mineral hardness.

Anecdotally, we know that some small changes (not those on the scale of an enterprise) are relatively easy to implement but that as the number of minds we have to change rises the effort to change them seems to require exponentially more effort, the forces we need to align do not seem to be linear in the number of minds. Perhaps because of connectedness, as change moves from a small group to a larger one, we have to address a greater number of issues, a larger infrastructure of the manifestations of culture and policy (e.g., how pay and performance are set), and the interconnections

themselves among organizational units that are each at different points along their own trajectories of transformation. So, the justifications for a belief (as we have no data) in an exponential relationship are:

1. The larger the circle of transformation the more (separate) “systems” that are impacted, e.g., human resource processes that are outside/beyond a self-contained unit. One might be able to implement some lean practices in a particular factory floor cell, but to promulgate those practices to any considerable number of cells, there would have to be changes in many other contributing systems that are not on the factory floor per se, such as performance awards and rewards, recruiting and hiring practices, how the floor is organized, how interdisciplinary teams govern themselves, etc.
2. Systems that interact may require some change on each end, manifesting a domino effect. In a fully connected enterprise, there would be $n(n-1)/2$ interconnections. That number of interconnections rises almost as the square of the number of elements.

Absent a scale, we cannot measure the distance between where we are now and where we desire to be, so one—perhaps the critical—element on which resource requirements depend is missing.

SHOULD TRANSFORMATION BE MANAGED AS A (TRADITIONAL) PROJECT?

Perhaps this is the reason that we read that so many transformation efforts fail: there may have been only a weak rational basis in the first place for estimating/predicting/forecasting the extent of the transformation with the resources available. In other engineering disciplines, we have created this rational basis by postulating a theory among requirements, duration, effort, and output, and then collected data to create quantitative models of prediction.

If we looked at standard project management texts and standard tools (such as Microsoft Project), we would find equations like these:

$$\begin{aligned} \text{Product (i.e., output)} &= \text{Productivity (objects per person-time)} \\ &\times \text{Effort (person-time)}, \end{aligned}$$

where

$$\text{Effort} = \text{Duration} \times \text{Number of People}$$

Presumably, if we had a way to characterize the quantity of transformation, then that would be *Product* and we would already know our *Productivity* from historical transformation project records, so we could compute new *Effort*.

Here are several well-know problems in the knowledge-work domain for this notional formulation:

1. Knowledge work does not have a linear relationship among *Effort*, *Duration*, and *Number of People*. Just consider this: if we increased the number of people by, say 10X, would the project go 10X faster, be done 10X sooner? No, it would come to a standstill trying to absorb and find useful work for the bolus of new people.
2. Organizations are interpretive bodies, not physical ones (Daft and Weick 1984). They do not obey the rules of physics, so any organization might respond to change differently on two separate occasions. An organization might “embrace” transformation in one instance and move more slowly for the “same transformation” another time.
3. For transformation, what would be the terms, the objects, of *Product* and *Productivity*? Why would we think there would be a stable relationship between such objects and person-time, as their might be for, say, plumbers installing toilets in a given building?

We know from models that predict the duration of knowledge-intensive projects, such as SLIM for software (Putnam and Myers 1991), COCOMO II for software (Boehm et al. 2009), and COSYSMO for systems engineering (Valerdi 2008), there are non-linear and limiting relationships among the driving variables. We lack the elements needed to create an estimation relationship (not to mention equation) in order to operate transformation as a project. Not being able to characterize the change on a scale, it will be difficult to characterize progress along the way—especially achieving the new state—particularly because we humans tend to think of behavior as linear when it is likely in this case to be exponential (Paich and Sterman 1993; Sterman 1989). That is, there may be little discernable change for a long time and then, like a ketchup bottle, a lot (Rogers 1995). And while we may have a budget and target duration, they have no rational bases, at least not ones based on evidence.

Besides, there are (many) patterns of transformation, including inertia and momentum (Hannan & Freeman 1984; Greshov, Haveman, and Oliva 1993) and its counter-evidence (Amburgey and Barnett 1993; Kelly and Amburgey, 1991), and we would need commitment processes for each of them, presumably different, along with their corresponding estimation models, else what would be the basis for asking for a commitment?

Since we do not yet have a rational basis for making commitment decisions, perhaps we should consider a different model of managing transformation as a project. One alternative that has been described for software in particular—that is, not transformation—is called Scrum (Schwaber and Beedle 2001). It is essentially a fixed duration, usually 30 calendar days, during which an agreed set of objectives are attempted by a dedicated staff. The only

real promise is that the staff will devote full-time towards achieving the stated and agreed ends. At the end of the interval the customer examines/inspects the outcome and decides whether to proceed or not. If the customer decides to proceed, then he/she works with the team to negotiate the next 30-day scope. There is virtually none of the traditional planning: no project leader; no PERT or Gantt chart; no formulæ for estimating duration or effort; no intermediate milestones; and no written, detailed requirements, or plan up-front. It is a cycle of do-inspect-adjust and do some more. Because it is so simple sounding, it does not have to address how big the change is, detailed project planning, any estimates for the initiative as a whole, and resource commitments greater than 30 calendar days. While the limitations of Scrum are beyond this article, they are suggested elsewhere (Boehm and Turner 2003).

Concrete Example of Issues

Referring to FIGURE 1 Enterprise transformation roadmap (Nightingale 2009, p. 7) the reader’s attention is pointed to a single bulleted item on the left side, inside “Implementation Results”: Commit Resources. This item is summative: it collects all of the resources needed to implement based on

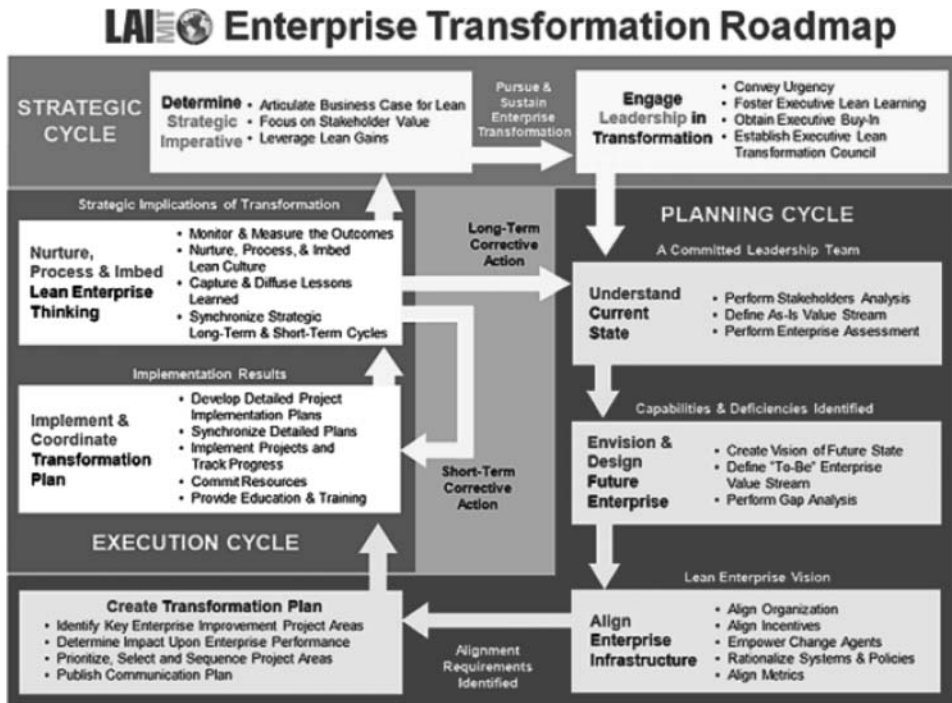


FIGURE 1 Enterprise transformation roadmap (Nightingale 2009, p. 7).

the outcomes of all of the previous work. We can ask how the resources could be computed. Some detailed guidance is given in *Transitioning to a Lean Enterprise: A Guide for Leaders* (2000), where, under the heading of “Commit Resources” (p. 89) there is the amplifying instruction to “Make firm commitments to all resource needs.” There does not appear to be any method given for the actual derivation of those resource needs, though there are admonitions on the same page, such as “Develop a time-phased schedule . . . with due consideration to resource limitations.”

Practitioners would look to a theory source in order to provide the bases for estimating which resources and how many of each would be required before even considering asking for a commitment to engage them. The creation of that theory is a principal research agenda item.

What are the Time Scales for Transformation Managed as a Project?

Instead of looking for inviolate rules—as we might for billiard balls—we seek patterns. One of the best-known seekers was an American sociologist, Talcott Parsons. He formulated and described a theory of action in his writing of some-odd thousand pages, to which adherents added at least an equal amount and detractors yet another equal amount (Turner 1999). Due to the sheer size of those references, the description below is significant redaction.

Bluth (1982) postulated four functions that all organizations had to fulfill:

1. Adaptation, the interface with the outside environment, scans for “interesting” items and takes in energy, usually in the form of new ideas, and if those ideas are worthwhile (that is, consistent with the behavior patterns of the organization) then
2. Set goals and allocate resources accordingly.
3. Based on the goals and resource allocation, integrate new processes into the behavior.
4. Maintain the patterns of behavior in the organization.

Consider the time scales of the first three functions, which ordinarily proceed in the order shown. How long does it take for environmental scanning to happen, how long does it take to identify an interesting idea? It is usually on the order of days and weeks. How long does it take to set goals and allocate resources? Usually organizations engage in an annual event, with at least one mid-course review, so there may be six months between successively setting-goals-and-allocating-resources. And how long does it take to integrate new processes into the work based on the new goals and resource allocation? Years? Do we even have any information on that l-o-n-g duration?

Here then is the challenge of enterprise transformation: ideas come in daily or weekly; they are then bundled together semi-annually and a few are funded; and then those that are funded are honed into new ways to work, which can take years for satisfactory adoption. One does not have to be familiar with queuing analysis to see that good ideas will back up, potentially causing pressure to accelerate integration. There certainly exists advice “at large” about how to increase the rate of integration, but there is little empirical study, little evidence base [see comments by Adler and Clark (1991) and Adler (1990)]. Accordingly, we cannot be said yet to have a rational basis for managing the fate of good ideas, in accordance with Parsons’ theory anyway.

IS TRANSFORMATION INHERENTLY MESSY AND THEREFORE CANNOT BE PLANNED?

Perhaps enterprise transformation is not really a project; perhaps it should not be framed or managed as one. Perhaps it is not really an “episode,” not something that is performed by a team that is then disbanded (part of

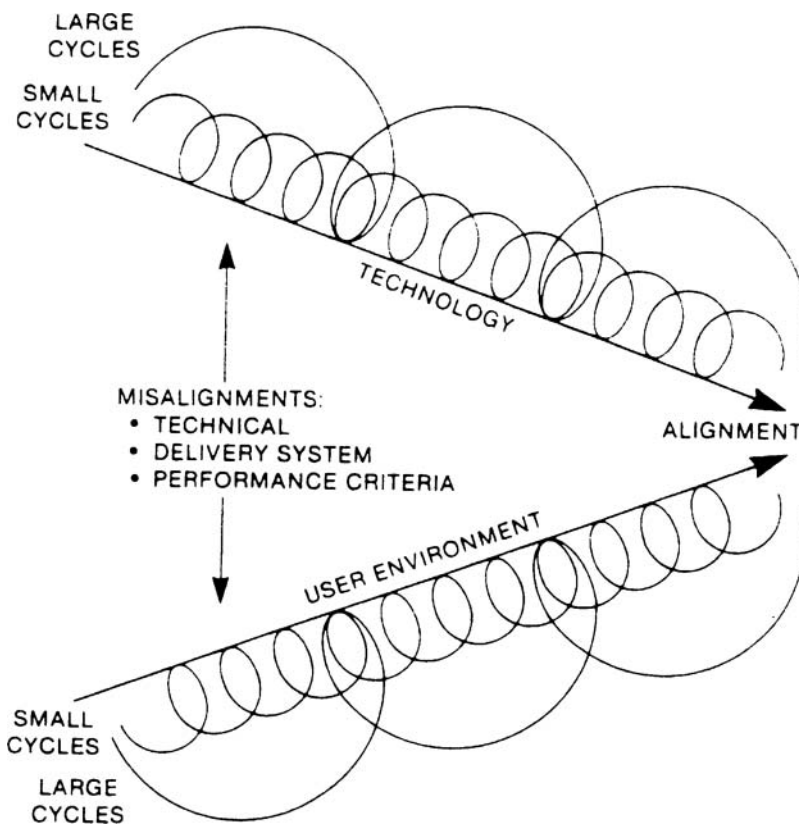


FIGURE 2 Mutual adaptation of technology and organization. Reprinted from (Leonard-Barton 1988).

the traditional definition of project), but rather enterprise transformation is something continuous, integrated—an adaptive function, as in Parsons' model.

Dorothy Leonard-Barton's (1988) classic diagram of the changes introduced by new technology (Figure 2) reminds us that while enterprise transformation is not a "technology" per se, we may be facing difficult intellectual territory, where simultaneously and in parallel we need to adapt something like technology (e.g., lean thinking) to the organization, and the organization to technology. It is not a controlled experiment, but rather it is more like action learning. What is the best way to learn what we need to succeed? Where should we look for the misalignments (besides the labels in Figure 2)? Are the misalignments in the list exhaustive and mutually exclusive? And what should we do when we encounter them: move the technology or move the organization? At least one author (Lopata 1993) has remarked that most of the literature since Leonard-Barton has focused on adapting the organization to the technology, and very little on how to adopt the technology [see Markus (1983)] for a view that neither should be singled out. (Lopata 1993), incidentally, may be the only quantitative study of transformation, as she carefully chronicled a number of factors over time that contributed to, in this case, a combined, automated library catalog among three cooperating universities.

HOW MUCH CHANGE CAN AN ORGANIZATION ABSORB AND AT WHAT RATE?

Clearly, success at transformation requires that change be mediated by a force that is sensitive to the rate at which change is being effectively incorporated. There is a line of studies on readiness (sometimes called capacity) for an organization to undergo transformation (Judge and Elenkov 2005; Voelpel, Leibold, and Mahmoud 2004; Staber and Sydow 2002; Judge and Douglas 2009), but none to assess the rate at which change can be absorbed.

It might be worth noting that the question of how rapidly organizations can absorb change is not the same as how to determine the capacity to react to environmental factors/stresses that may determine their competitive response. Reacting to changes in the environment, particularly permanent ones, is considered part of strategy execution. If the environmental change is large enough then strategy itself may need to be examined and re-oriented. But these considerations are afield from the topic here: once an organization has decided to transform itself—perhaps as a competitive response to environmental pressures—the (unanswered) question remains: at what rate can that transformation rationally proceed?

A related series of studies examined the balance between stability and change, the principal notion being that both epochs are planned and at

the end of the stable period the next, new change is introduced. Without previewing the next issue of this *Journal* on the special topic of stability and change, suffice it to outline the main ideas:

1. There are often multiple, interrelated or emergent changes in parallel. The sequential model of change, while easiest to describe and communicate (including at the beginning of this paragraph), is almost never found in the field.
2. There is a trade-off among implementing a single change, implementing subsequent changes, and attending to daily operations. Too much of one robs from the others.
3. Balancing between stability and change is something of a dance and there is nothing quantitative or generally historical to help.

PACING, SEQUENCING, AND ROUTINIZING

Meyer and Stensaker (2006) review the literature on pacing and sequencing. "Pacing has to do with the tempo and timing of change. Sequencing is related to the time of change, but refers specifically to the sequence in which different elements of the change are introduced" (p. 225).

Some researchers argue that change processes should be pursued at a slow pace while others argue that radical change need to be made quickly. Both approaches can be linked with negative as well as positive reactions among organizational members. In order to achieve change, the organization needs momentum and energy. Fast-paced changes will contribute in releasing more energy. On the other hand, changes that are made too quickly may constrain problem solving, and adaptation to the new situation. Slow-paced change facilitates learning and allows all organizational members time to understand what needs to be changed and how. When done effectively, evolutionary change (slow-paced and incremental change) can be crucial part of short-term success. The long periods of incremental change implies that the organizations can concentrate its resources on business operations. If a change process takes too long, the change may lose salience and most people will not notice something happening. Slow pace can also allow for mobilization of power and increased resistance, which is one of the main arguments behind implementing large-scale changes as rapidly as possible (p. 225, citations omitted).

The discussion above is notional; there are no historical change project data to support it. From a research agenda perspective, practitioners need a contingency framework in which we can enter something about the characteristics of the transformation and then derive values for the pace and sequencing, such as how slow is slow; which changes should be introduced

slowly and which rapidly; what is the best sequence to balance the competing interests; and so on.

The intuition behind routinizing is that learning how to transform an organization can become a series of routines that are performed mindfully. That series would likely include scanning for environmental cues and pressures, diagnosis, search, design, screen, evaluate, and authorize (Meyer and Stensaker 2006, p. 226). In addition, there would be organizational structure routines around team formation and chartering, governance, identification of stakeholders, etc. A research agenda question is why we see routinization so infrequently in the field when there is such a significant upside with so little downside (at least on paper).

ROLE OF LEADERSHIP

Many post hoc surveys on strategic change or transformation point to the high scores that leadership gets as a critical factor. From our research perspective, there are numerous questions about the role of leaders:

- What exactly do leaders do to lead change, and how often do they do it and with whom?
- Is there a set of characteristics [e.g., cognitive capability (Jaques and Cason 1994)] or contingencies [e.g., life cycle phase (Quinn 1991)] that make one style of leadership more appropriate than others for transformation?
- Is there anything generalizable in leadership's role in transformation? Or is everything situational, anecdotal, as in Bossidy and Charan (2002); Slater (1998); and Kearns and Nadler (1993)?
- How do we understand and explain that there are cases where leadership involvement actually inhibits change [e.g., Bayer and Melone (1989)]?
- Is there a "cult of leadership" with respect to transformation, wherein when the strong, top leader leaves then the transformation dies? (Kets De Vries 2009)

WHAT IS TRANSFORMATION?

No doubt other authors in this special issue of the *Journal* shall address the particulars of the definition of transformation, so for our purpose we only need to differentiate transformation from adaptation and from strategic innovation. The reason for the differentiation is to identify what is known about adaptation and innovation in order to see if they apply to transformation, too. In other words, we need to know whether to appropriate the learning of adaptation and innovation for the purpose of implementing transformation. In both cases, we would want to identify the specific steps that organizations take to adaptively fit into the perception of their environment and then how they innovate organizational forms—and manage

the adaptation and innovation processes—in order to respond internally to changes in that environment.

One of the reasons for pursuing this line of differentiation or integration, depending upon your point of view, is to see if—and what—we can borrow from the rich literature on how organizations respond strategically to what is always characterized as rapidly and complexly changing environment (see, for example, McGrath (2001) and Lengnick-Hall and Beck (2005)).

SUMMARY OF RESEARCH AGENDA

At its heart, every practitioner needs to be able to answer the usual who, what, how, etc:

- What is the goal in terms of transformation? What e-x-a-c-t-l-y is transformed and by how much? In what terms is transformation measured (not the resulting improvement in, say, product development or production capability, but rather in terms of change)?
- What does it take in term of resources to make the transformation, however it is measured?
- How many people are involved, in what roles, and when in the process? What e-x-a-c-t-l-y are they supposed to do? Are these answers contingent on anything?
- How much change can my organization absorb during the time periods of interest? Should I implement the high impact changes first in order to show tangible progress or last because they may be the most disruptive to daily production? Should I start small so that I can move along the learning curve quickly at first without too negatively affecting the organization or should I start big so that we make a visible difference to justify the initiative? What is the context most relevant to the answers?
- What is the place of leadership? How much is needed, when and where? And what e-x-a-c-t-l-y are the leaders supposed to do?
- What is the best way to manage a transformation? As a traditional project?

How might such an over-arching agenda be addressed? I can think of two simultaneous field methods:

1. Collect resource information as each transformation step unfolds, no matter which management method is used. This information should include identifying the steps themselves, which in turn will be an indication of the actual trajectory through a planned (or at least described) change process.
2. Use grounded theory to examine the contingencies across initiatives, even perhaps inside the same organization, with the hope of identifying the principal ones and connecting them to observed outcomes.

While the research agenda contains some large and significant entries, we can be positive about the future, at least because now there is a central place to publish such a list.

ACKNOWLEDGMENTS

The anonymous reviewers offered many constructive and concrete suggestions that improved the framing and presentation. The editors in chief are acknowledged and appreciated for their persistence and determination to create a common place for the communication about our collective work. And Dr. Byron Fiman has been my constant example, inspiration, and sounding board for better ways to transform enterprises.

REFERENCES

- Adler, P. S. (1990). Shared learning, *Management Science* 36(8):938–957.
- Adler, P. S., Clark, K. B. (1991). Behind the learning curve: A sketch of the learning process, *Management Science* 37(3):267–281.
- Amburgey, T. L., Barnett, W. P. (1993). Resetting the clock: The dynamics of organizational change and failure, *Administrative Science Quarterly* 38:51–73.
- Bayer, J., Melone, N. (1989). *Adoption of Software Engineering Innovations in Organizations* (Technical Report 89 TR 17). Pittsburgh, PA: Software Engineering Institute. Retrieved from <http://www.sei.cmu.edu/library/abstracts/reports/89tr017.cfm>
- Bluth, B. J. (1982). *Parsons' General Theory of Action: A Summary of the Basic Theory*. Granada Hills, CA: NBS.
- Boehm, B., Abts, C., Brown, A. W., Chulani, S., Clark, B. K., Horowitz, E. et al. (2009). *Software Cost Estimation With COCOMO II*. Englewood Cliffs, NJ: Prentice-Hall.
- Boehm, B., Turner, R. (2003). *Balancing Agility and Discipline: A Guide for the Perplexed*. Reading, MA: Addison-Wesley.
- Bossidy, L., Charan, R. B. C. (2002). *Execution: The Discipline of Getting Things Done*. New York: Crown Business, imprint of Random House.
- Burke, W. W., Litwin, G. H. (1992). A causal model of organizational performance and change, *Journal of Management* 18(3):523–545.
- Burton, R., Obel, B. (2003). *Strategic Organizational Diagnosis and Design: The Dynamics of Fit*, 3rd ed. New York: Springer.
- Conklin, J. (2005). *Dialog Mapping: Building Shared Understanding of Wicked Problems*. New York: Wiley.
- Daft, R. L., Weick, K. E. (1984). Toward a model of organizations as interpretation systems, *Academy of Management Review* 9(2):284–295.
- Goetsch, D. L., Davis, S. B. (2006). *Quality Management: Introduction to Quality Management for Production, Processing, and Services*. Englewood Cliffs, NJ: Pearson Prentice-Hall.
- Greshov, C., Haveman, H. A., Oliva, T. A. (1993). Organizational design, inertia and the dynamics of competitive response, *Organizational Science* 4(2):181–208.
- Hannan, M. T., Freeman, J. (1984). Structural inertia and organizational change, *American Sociological Review* 49:149–164.
- Jaques, E., Cason, K. (1994). *Human Capability: A Study of Individual Potential and Its Application*. Fleming Island, FL: Cason Hall.
- Judge, W., Douglas, T. (2009). Organizational change capacity: The systematic development of a scale, *Journal of Organizational Change Management* 22(6):635–649.
- Judge, W. Q., Elenkov, D. (2005). Organizational capacity for change and environmental performance: An empirical assessment of Bulgarian firms, *Journal of Business Research* 58:893–901.
- Kearns, D. T., Nadler, D. A. (1993). *Prophets in the Dark: How Xerox Reinvented Itself and Beat Back the Japanese*. New York: HarperCollins.

- Kelly, D., Amburgey, T. L. (1991). Organizational inertia and momentum: A dynamic model of strategic change, *Academy of Management Journal* 34(3):591–612.
- Kets De Vries, M. (2009). *The Leadership Mystique: Leading Behavior in the Human Enterprise*, 2nd ed. Upper Saddle River, NJ: FT (Financial Times) Press, imprint of Pearson.
- Lengnick-Hall, C. A., Beck, T. E. (2005). Adaptive fit versus robust transformation: How organizations respond to environmental changes, *Journal of Management* 31(5):738–757.
- Leonard-Barton, D. (1988). Implementation as mutual adaptation of technology and organization, *Research Policy* 17(5):251–267.
- Lopata, C. L. (1993). *The Cooperative Implementation of Information Technology: A Process of Mutual Adaptation*. Doctoral dissertation, Drexel University, Philadelphia, PA.
- Markus, M. L. (1983). Power, politics, and MIS implementation, *Communications of the ACM* 26(8):430–444.
- McGrath, R. G. (2001). Exploratory learning, innovative capacity, and managerial oversight, *Academy of Management Journal* 44(1):118–131.
- Meyer, C. B., Stensaker, I. G. (2006). Developing capacity for change, *Journal of Change Management* 6(2):17–231.
- Nightingale, D. (2009). *Second International Symposium on Engineering Systems*. MIT, Cambridge, MA. Retrieved from <http://lean.mit.edu/component/docman/doc.download/2304-enterprise-systems-principles>
- Paich, M., Sberman, J. D. (1993). Boom, bust, and failures to learn in experimental markets, *Management Science* 39(12):1439–1458.
- Putnam, L., Myers, W. (1991). *Measures for Excellence: Reliable Software on Time, Within Budget*. Englewood Cliffs, NJ: Prentice-Hall.
- Quinn, R. E. (1991). *Beyond Rational Management: Mastering The Paradoxes and Competing Demands of High Performance*. San Francisco: Jossey-Bass, imprint of Wiley.
- Robertson, P. J., Roberts, D. R., Porras, J. I. (1993). Dynamics of planning organizational change: Assessing empirical support for a theoretical model, *Academy of Management Journal* 36(3):619–634.
- Rogers, E. M. (1995). *Diffusion of Innovations*, 4th ed. New York, NY: The Free Press.
- Schwaber, K., Beedle, M. (2001). *Agile Software Development with Scrum*. Englewood Cliffs, NJ: Prentice-Hall.
- Slater, R. (1998). *Jack Welch & the G.E. Way: Management insights and leadership secrets of the legendary CEO*. New York: McGraw-Hill.
- Staber, U., Sydow, J. (2002). Organizational adaptive capacity: A structuration perspective, *Journal of Management Inquiry* 11(4):408–424.
- Sberman, J. D. (1989). Modeling managerial behavior: Misperceptions of feedback in a dynamic decision making experiment, *Management Science* 35(3):321–339.
- Transitioning to a Lean Enterprise: A Guide for Leaders*. (2000). (Roadmap explorations, Vol. III). Cambridge, MA: MIT. Retrieved from <http://lean.mit.edu/downloads/doc.download/82-transition-to-lean-roadmap-explorations>.
- Turner, B. S., Ed. (1999). *The Talcott Parsons Reader*. Malden, MA: Blackwell.
- Valerdi, R. (2008). *The Constructive Systems Engineering Cost Model (COSYSMO): Quantifying the Costs of Systems engineering Effort in Complex Systems*. Saarbrücken, Germany: VDM Verlag.
- Voelpel, S. C., Leibold, M., Mahmoud, K. M. (2004). The organizational fitness navigator: Enabling and measuring organizational fitness for rapid change, *Journal of Change Management* 4(2):123–140.