

Whole-System Architecture

A Model for Building the Lean Organization

By Lawrence M. Miller

(From *Getting to Lean – Transformational Change Management*)

No theory or method of management has had the impact that the Toyota Production System or lean management has had over the past fifty years. Norman Bodek first brought its architects, Taiichi Ohno and Shigeo Shingo, to the United States and translated their books to English. It was then popularized by James Womack¹, Jeffery Liker² and others as lean management or lean culture. Lean management and culture has become today's standard of management for most organizations whether in manufacturing, healthcare or other sectors of the economy. Lean management has repeatedly proven its effectiveness to improve both efficiency and customer satisfaction. But the implementation of lean management has proven to be problematic for many companies. They get the idea of lean, but don't recognize the significance of the transformation required in both behavior and organization architecture, and they lack a clear method to create that transformation. This book presents a method of transforming the entire system of the organization, its architecture and culture.

When many companies begin their lean journey they may not realize that both Honda and Toyota started their operations in the United States and other countries outside of Japan with a green-field site where they designed the plant layout, organized the equipment, aligned their suppliers, hired all of the managers and associates and trained them in their way. They created a unified *whole-system* whose parts were all aligned to the same philosophy. They were not changing a culture, overcoming resistance, or redesigning existing facilities. However, this is entirely different than the challenge facing most companies. Toyota and Honda succeeded because they had a unified, whole-system that they built over time and for which they have common understanding and commitment at every level of the organization. In that sense, they had it easy.

Most companies that have tried to adopt lean management have disaggregated that whole-system and implemented some pieces of it. They have implemented 5S, just-in-time, work teams or problem-solving groups and have often experienced failure. The human body is a *whole-system* comprised of separate organs or sub-systems and they fit together as unified architecture. The heart relies on the lungs for oxygen and they both rely on the digestive system for nourishment. If you remove any of those sub-systems from the whole, that organ will quickly die. In the same way, pieces of lean management most often die like fish out of water because they depend on the other organs for their survival. You cannot implement a lean management structure, with strong teams at every level, without changing the decision process, the information flow, and the reward systems.

¹ Womack, James P., Jones, Daniel T., Roos, Daniel. *The Machine that Changed the World*. New York, Free Press, 1990

² Liker, Jeffrey K. *The Toyota Way*. New York, McGraw Hill, 2004.

You cannot implement just-in-time work flow without changing the information flow, the decision-making process and without redefining jobs at the first level. And, you cannot implement lean culture without changing the functions and structure of management. These are all organs of the same body. Organizations, like the human body, are all whole-systems. The key to managing change and to sustainability is creating alignment between the capabilities of the organization and the external environment (adaptation); and creating alignment between the organizations strategy and values, and all of the sub-systems of the organization.

DISRUPTIVE ENVIRONMENTS REQUIRE TRANSFORMATIONAL CHANGE

Organizations, whether public or private, are living and changing bodies. Most will fail, sooner or later. The cause of failure is rarely the external threat, the attack of the barbarian or the fierce economic competitor. The cause is most often an act of suicide, self-inflicted by one's own hand. Civilizations most often decline when there is an internal loss of unity, of common vision and a faith in the future – companies do the same. *Whole-system architecture* is designed to create unity of purpose, a unified understanding of values and vision; alignment of systems and structure, and alignment to strategy.

Bureaucratic organizations were created in a world in which the external environment was predictable and slow moving. It is no longer. Most industries are affected by disruptive technologies or markets. Many of those technologies are clustered around the Internet and related marketing channels. But there are also disruptive technologies that impact how things are made and designed. How books are printed, for example, has enabled ordering on Amazon one day, the very book you ordered being printed that night, and shipped out the next day to arrive at your door the following day. In almost every industry companies are confronted by disruptive technologies. Those disruptions require revolutionary changes in internal processes and organization. Continuous improvement will not meet the challenge of disruptive environments.

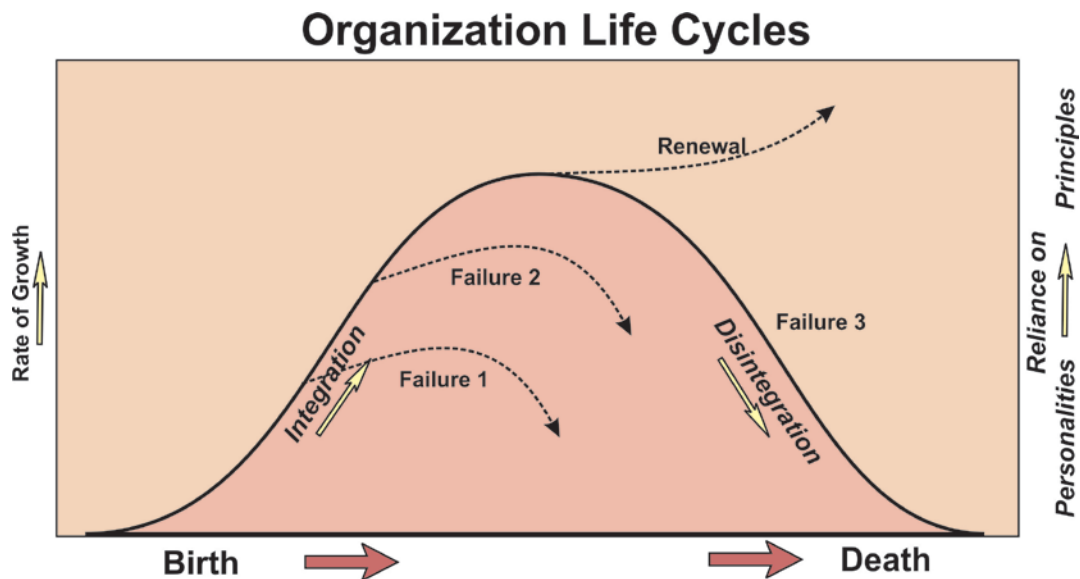
Because managers don't know when the next innovation is going to occur, when they will have to respond to disruption with redesigned processes, culture and organization, they must have a methodology for recreating their organization. The question is whether they will create their own internal revolution or be the victim of a revolution created by a competitor. Continuous improvement is not a response to disruptive technology or markets. What is required is transformative and holistic change.

LIFE-CYCLES AND ORGANIZATIONAL TRANSFORMATION

There is another reason why organizations must periodically redesign themselves. All living things go through transformations from one stage of life to the next. Organizations, like people, are not robotic or predetermined in their transitions. However, just as one can predict behavioral tendencies of a two year-old or thirteen year-old, one can also predict that an organization will go through life-cycle stages. Each stage requires transformations in the design of the organization's systems and structure, just as different human life stages require different structures to our own lives. It is obvious that an early entrepreneurial company has a very fluid and flexible organization – if any organization at all. With growth comes the requirement of specialization both in core functions such as research and engineering, manufacturing and marketing; and, with that

specialization comes increasing administrative processes, accounting and recording, human resource and information systems, with increasing definition and complexity. And, with the growth of those administrative systems comes the risk and burden of bureaucracy.³

Thomas Jefferson said that “Revolutions in human affairs, like storms in the natural environment are, from time to time, a necessary and desirable thing.” What did he mean by this? He meant that from time to time we need to rethink how we do things; rethink our system and organization and question whether it meets the needs of the time in which we live. This is as true for every company as it is true for a nation. Jefferson recognized the natural processes of aging that take one from the vitality and growth of youth, to a sedentary state and decay of aging, which always leads to death.



Most entrepreneurial companies are born with the inspiration of an idea and faith in that idea. And, that idea is generally a response to a challenge, large or small. That person, like the founders of civilizations, are most often better at spreading “the Word” than they are at organizing people and processes. The entrepreneurial stage is when the organization is creatively responding to the challenges from its environment. The process of growth in companies, like in civilizations, is one of creative response, followed by a success, and then a higher level challenge requiring a higher level response.⁴ Neither companies nor civilizations emerge in the absence of challenge and the failure to recognize a challenge may be the cause of collapse. As Arnold Toynbee said, “We have rejected the view that civilizations are apt to be generated in environments – physical or human – which offer unusually easy conditions of life to Man.” “We have now perhaps established decisively the truth that ease is inimical to civilization. The results of our investigation warrant the proposition that, the greater the ease of the environment, the weaker the stimulus towards civilization which that environment administers to Man.”⁵

³ I have described the process of rise and fall, integration and disintegration in more detail in *Barbarians to Bureaucrats – Corporate Life Cycle Strategies*. New York, Fawcett Columbine. 1990.

⁴ Toynbee, Arnold. *A Study of History*. Cambridge University Press, London. 1934.

⁵ Ibid, Volume 2, page 31.

It is this mechanism of challenge-response that leads to success stages of growth in organizations and each stage requires some degree of redesign of the organization's architecture.

As organizations grow, the dominance of the personality who founded the organization must give way to the dominance of principles and process. All great companies and countries are dominated by principle rather than personality. It is an immature country or company in which the personality of leaders is more important than the principles and processes that govern the behavior of its members.

The first point of failure is the failure of this transition – establishing principles that will outlive the personality and form firmer ground upon which the structure of specialized functions and defined processes can be built.

The second most common failure point is when those systems of specialization, both in core and enabling processes, become dominant in the life of the organization and its members owe their loyalty to the marketing or manufacturing organization and not to the whole; or the human resource or IT/IS organization, and not to the whole. This is when the organization becomes focused on making legs, rather than making chairs and the processes of disintegration sets in prematurely.

Assuming the leadership of the organization achieves integration of these specialized functions, the organization will progress toward maturity. But, maturity has its own risks. With maturity comes security, wealth, and what Arnold Toynbee called "*a condition of ease*" and it is then that the leaders fail to recognize new challenges on the landscape and lose their creativity, relying on yesterday's successful response but now to new challenges, and mechanically pull the same lever faster and harder but with decreasing effect. It is the failure of creativity, the worship of heroes of the past rather than the present, and the failure to respond to challenge that signals the death of a culture and the beginning of disintegration. It is this loss of creativity and will, the internal act of suicide that is the most frequent cause of disintegration and death.

But, there is free will. Unlike in human life, death of organizations is not inevitable, only likely. But, the natural process of aging in organizations can only be averted by the willingness to conduct your own internal revolution from time to time. Whole-system architecture is about conducting your own controlled internal revolution. It is about instituting a creative response to the challenges of this day.

ORGANIZATIONS AS SYSTEMS

All systems must become aligned to their environment if they are to survive. Adaptation is critical for survival of every species. With the increasing speed of change in both technology and social behavior, organizations must increase their speed of adaptation.

Every system whether an ocean or forest, a school, hospital or business, all have the same elements: First, there is input into the system from a supplier or input system; then there are processes that transforms input to output. That transformation, in the case of a business, must add economic value to the customer who is the receiving system. Every business create more value than the cost of the work system, otherwise it is not sustainable. And, every system adjusts to its environment by processing feedback.

When redesigning any organization or system it is important to realize that there are big systems and smaller systems, or sub-systems. For example, the human body is a system which contains numerous sub-systems. The functioning of the whole, whether human body or company, or country, is dependent on the alignment of these sub-systems to each other and to the whole. This is where things often go wrong.

For example, in the human system, our brain or nervous system may be sending signals to other systems to eat more sugar and fat, and that response may not be in alignment with the needs of our digestive system or other system. Hence, you get fat and die of a heart attack – system failure. Misaligned sub-systems produce failure. You can easily see the parallel in a company. The functioning of production, marketing, finance, etc., must be aligned otherwise there is a system failure. That is why we have strategic planning, Hoshin Kanri, budgeting, etc., to create organizational alignment. But, that planning is often less than optimally successful because it doesn't deal with the whole system. Strategy deployment often fails to align the internal technical and social systems.

The essence of strategy is recognizing threats and opportunities presented by the external environment and then responding to those in a way that aligns the organizational systems to meet those challenges. In other words, if the future of marketing our products is going to be through the Internet and social media, with single day response and delivery to customers, virtually every system in the organization needs to be aligned to achieve success in that system. You have to intentionally design that system. The old system will likely not have that capability. Continuous improvement will not get you there. Intentional redesign will.

SOCIO-TECHNICAL SYSTEMS

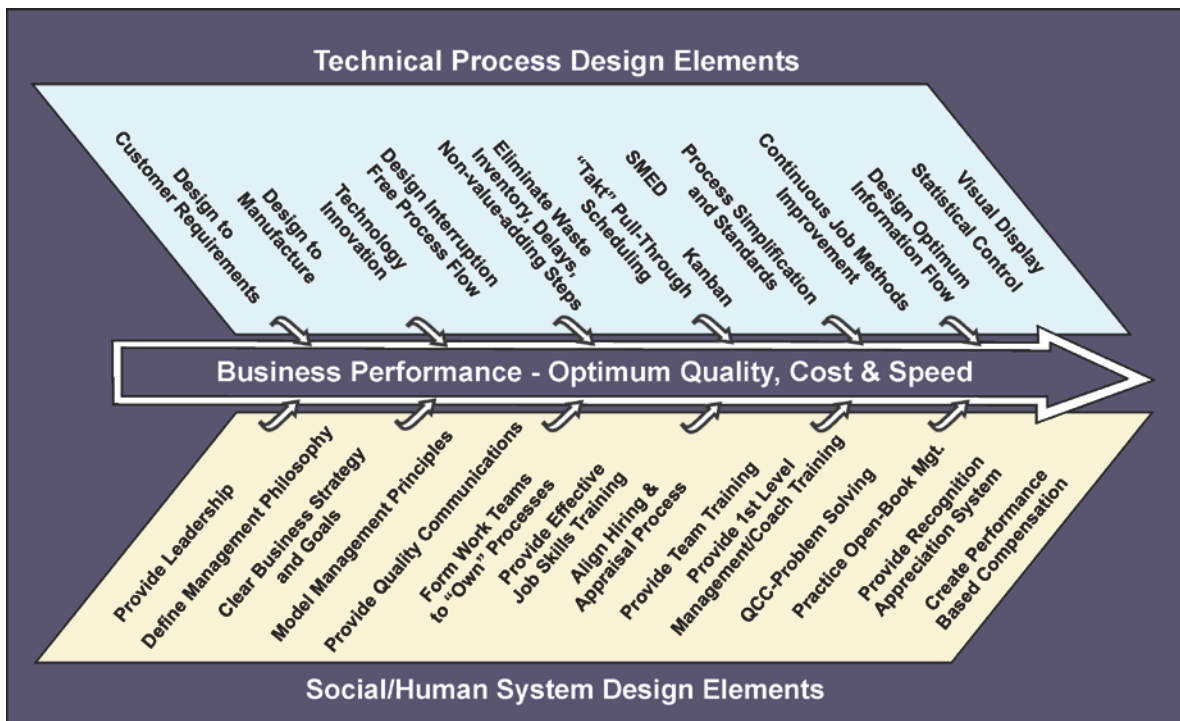
When I first read the article by Lou Davis on socio-technical systems (STS) it was one of those “ah-ha” moments when something becomes obvious and useful. The theory of STS is simple and elegant. In every organization there are work or technical systems (the work process or “value-stream”) and there are social systems, the “people” systems or culture that surrounds the work process. In most organizations these have been designed independently and are misaligned, producing sub-optimal performance. Socio-technical system design, or what I chose to call *whole-system architecture*, is a change methodology as well as a way of looking at the nature of the organization. STS or whole-system design is based on a process of co-creation, in which the stakeholders in the process together analyze the current state and design a future ideal state.⁶ The theory is that by having managers and employees who work in the system, customers, suppliers and anyone else who *knows, cares* or must *act* on the system engaged together, not only will the future design be more effective for all, it will also gain their ownership and commitment which will lead to successful implementation. This is the principle of co-creation and it is a key element in successful change management.

About a month after I read the Lou Davis article I was presenting a consulting proposal to Moody's Investor Services in New York and I couldn't help myself. I proposed that we do an STS intervention to redesign their work system. They bought it and miraculously it worked. After that

⁶ Cherns, A. (1976). The principles of sociotechnical design. *Human Relations*, 29(8), 783-792.

my consultants and I did more than one hundred STS or whole-system architecture projects. When I became involved at Honda it was very obvious that their system was a dramatically different technical and social system than those I was used to. They did not use that language, but they didn't use "lean" language either. I simply incorporated the lessons from Honda into our whole-system architecture projects as a model of what another system might look like.

Most things that are useful are essentially simple. Socio-technical systems are simple. The tractor, car, airplane, telephone, the cell phone, the Internet, are all technical things. And, they all have dramatically altered social relationships. They have altered how children learn their ABC's, how we communicate with family, how we find dates and life partners, and how we buy or sell houses and cars. People change with technology and technology changes to meet the needs of people – it is all one big socio-technical-economic system. And, every factory, office, or hospital is a socio-technical-economic system. It's that simple. But, within our organizations changes often result in misaligned social and technical systems.



In writing this book I am drawing on two primary strains of knowledge. The first is previous systems thinking. The second is lean management and the study of the Toyota Production System. My purpose is to bring the best of these knowledge streams together to help you redesign your whole-system to lean standards.

Let me be clear about the theory and method presented in this book: This book incorporates methods and concepts from all of the following change management methods:

- Socio-technical system design.⁷
- Systems-thinking.⁸
- Idealized design.⁹
- Interactive planning¹⁰
- Re-engineering¹¹
- Appreciative inquiry¹²
- High-performance organization design¹³

All of the above theories and change management models have the following in common: First, they all seek to achieve significant, transformational change in the capability of an organization, not gradual or continuous improvement. Second, they all view the organization as a dynamic open-system interacting with its environment and engaged in adaptation to that environment. Third, they all view the organization not only as a mechanical system, but as a human or social system, that performs best when the psychology of humans is taken into account in the design of the system.

My contribution in this book is to synthesize all of the above theories and attempt to present them in an easy to follow way, using non-technical and non-academic language, directed at the purpose of implementing the lessons we have learned from Toyota, Honda and other model lean organizations. My purpose is to be more useful than brilliant!

Whole-system architecture is a change management methodology that recognizes the organization as a living, organic whole that must change in a coordinated way; and to do so in a way that will maximize the commitment and ownership of those who live within the organization. The first principle of managing change is that *we are committed to that which we help to create.* Conversely, we will not be committed to something that is imposed on or sold to us, no matter how good the sales pitch.

There is what I call the Habitat for Humanity principle. Habitat for Humanity builds homes for the disadvantaged. They learned an important lesson about sustainability. They do not just build a home and give it to a family. It is a requirement that members of the family must participate in the building of the house. They hammer nails, carry wood and use the paint brush. By doing this they are far more likely to care for and maintain that home. Their participation makes the home and the community more sustainable. The exact same thing is true of change within organizations. Habitats mission statement says *“We view our work as successful when it transforms lives and promotes positive and lasting social, economic and spiritual change within a community; when it is based on*

⁷ Trist, E. (1981). The Evolution of Socio-Technical Systems. In A. a. Van de Ven, Perspectives on Organizational Design and Behavior. New York: Wiley Interscience.

⁸ Senge, Peter M. The Fifth Discipline. Doubleday, New York, 1990.

⁹ Ackoff, R. L., Magidson, J., & Addison, H. J. (2006). Idealized Design. Upper Saddle River, NJ: Prentice Hall.

¹⁰ Ackoff, Russell L. *Re-creating the corporation: A design of organizations for the 21st century.* New York:Oxford University Press, 1999.

¹¹ Hammer, M. and Champy, J. A.: (1993) *Reengineering the Corporation: A Manifesto for Business Revolution*, Harper Business Books, New York, 1993.

¹² Cooperrider, David L. *Appreciative Inquiry: Rethinking Human Organization Toward a Positive Theory of Change.* Stipes Publishing, Champaign, IL, 2000.

¹³ Lytle, William O. *Designing a High-Performance Organization.* Block, Petrella, Weisbord, Clark, NJ, 1998.

*mutual trust and fully shared accomplishment; and when it demonstrates responsible stewardship of all resources entrusted to us.”*¹⁴This would be a good mission statement for almost any corporate change process. It must not only move equipment around and speed a production process. It must transform the lives of those within the organization. It must promote positive and lasting social, as well as economic change. Then you will have commitment.

Consultants may be useful to guide the process and to ask questions that can help your people think creatively. However, it must never be the consultant’s design. He or she must never own it. It must be owned by those who will then implement it. It is their house and they will live in it.

Whole-system architecture presents a useful metaphor. When you walk into a great cathedral your head goes back and you look up into the heavens of stained glass and flying buttresses. You marvel at the construction. And your first impulse is to focus on the physical thing of the structure. But, the architect had an end in mind. The architect understood that the nature of physical space, the interior structure of the cathedral, has an effect on the human spirit, emotions, and possibly behavior. You feel that effect when you walk into the cathedral, regardless of your religious views. The structure of your organization also has an effect on your spirit, emotions and behavior. But in most cases the effect is unintentional and often stifling, rather than uplifting of the human spirit. Our organizations need more than engineering; they need architecture. We must become architects of our organizations to promote the spirit of service to customers and the habits of innovation.

STS AND LEAN SYSTEMS - THE MISSING LINK

STS theory and methodology was the basis for all of the early self-directed team plants in the United States. The Gaines Topeka pet food plant was one of the first. Proctor and Gamble and Corning designed many of their plants using STS methods and the team process became the norm. For the most part these plants were successful; but, not in all cases. Similarly, many lean implementations fall far short of expectations or even completely fail. There is a common cause and it has to do with understanding the “whole-system.”

As my associates and I implemented projects we increasingly recognized the complexity of organizational systems. For example, we designed Shell Oil Company’s deep water operations in the Gulf of Mexico, Corning’s Fiber Optics manufacturing, several airline operations, and several banks. These were not simple operations. They were complex systems that included a great deal of information processing, relationships with contractors, high levels of uncertainty and risks. We realized that they were not only social and technical systems; they were economic or financial systems. That should be obvious, but it is not always taken into account in change management. It became apparent that the failure to take into account the flow of money into and out of the system may make the design of the social or technical system fail or not be sustainable.

One of the most well-known cases of STS was Volvo’s very progressive work system at their Uddevalla plant in western Sweden.¹⁵ The plant was designed by joint union-management committees and they designed the system for small teams of eight workers to assemble an entire

¹⁴ See Habitat for Humanity web site.

¹⁵ Sandberg, Ake, Editor. *Enriching Production –Perspectives on Volvo’s Uddevalla Plant as an Alternative to Lean Production*. Digital Edition. Avebury, Stockholm, 2007.

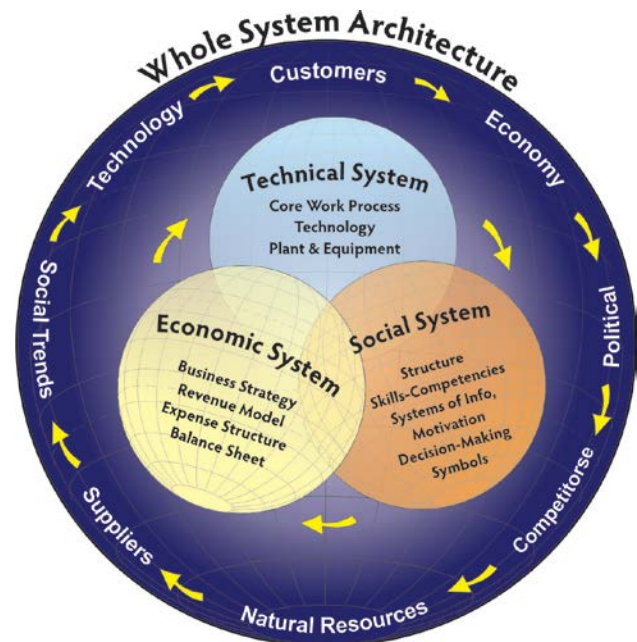
car. The moving assembly line that determined work speed in a traditional assembly plant was abandoned. In the Volvo system a work team controlled their own pace of work; they were all trained to do all jobs on the team and they could decide when to rotate jobs within the team. According to STS theory, this was ideal. They assembled four cars per day per work team. That amounted to a productivity rate of about twenty work hours per car. The problem was that Honda and Toyota were assembling cars in less than twelve work hours per car and every other auto company was rushing to adopt the lean model that enabled this rate of production. And, unfortunately, the Volvos being produced at that time were not of high quality. Their quality ratings were significantly below those of Honda or Toyota. After four years of operating this production system, in 1994 Volvo closed the plant. It is now a warehouse.

ENTER THE ECONOMIC SYSTEM

Does this mean that STS is a bogus theory, or that developing a work system that is humane and provides for an enriched work experience is a bad theory? Or, that the method of high participation design is not workable? Absolutely NOT! I have done this successfully about one hundred times. What it does mean is that if you focus only on the work system and social system it is possible to design a system that is not economically viable.

Every business enterprise is an economic system. Hospitals and non-profit organizations are also economic systems. Money comes into the system first as capital, and then revenues. Money goes out in the form of expenses and goods produced. The revenue must exceed the expenses and input value of the goods produced. In other words, the system must add value in economic terms. This is no news to anyone running a business. But it is news to some who implement both lean and STS systems. In both cases they can be designed without regard to the economics of that system.

In order to design the organization one must design and align the technical, social and economic systems together. If either of the three is not aligned with the others it is not sustainable and will fail.



The same model can be applied to any institution and even a country. The whole-system architecture process must begin with an analysis of the current state: work system (cycle time, eliminating waste, variances, etc.); an analysis of the culture or social system (the empowerment, decision-making, competencies, motivation, etc.); and an analysis of the money flow. Based on that analysis, design teams then design the future.

WHEN TO USE WHOLE-SYSTEM ARCHITECTURE:

We have been introduced to many problem-solving models as the solution to all ills. Whether it is Six-Sigma’s DCMAIC, or the Shewart Cycle of PDCA or PDSA, or the A3 problem solving model, they are all predicated on the idea that there is a specific problem to be solved. Why do you think there are so many problems? Could it be that there is something more fundamentally wrong?

Maybe there is something wrong with the nature of the system. In healthcare we know that if the basic diet and patterns of exercise, the basic system of managing input into the body, is deficient, solving each illness is not the real solution. It is masking the problem.

Whole-system architecture is about pro-actively creating the future organization and system. It asks, “Given the future environment, the technology, the market and social changes, what do we need to be like in the future and how do we create that future?” It is designing a fundamentally different house than the one we are living in. Yes, there is a “problem” but you won’t find the problem by fixing every rash and headache. The problem is that the design of the organization is not suited to its current or future needs.

Whole-system architecture is a process designed to create significant change in the culture and work processes of an organization and produce significant improvement in performance. If your organization has a relatively traditional culture, you need WSA to engage your people, gain understanding a commitment to change. If you only need to make small improvements, to engage people in continuous improvement, you do not need WSA. The American auto companies desperately needed to make significant change in their culture, but instead of a serious approach to analyzing and changing the culture, they opted for a less threatening and less dramatic approach of small groups working on small improvements. It was too late for that.

Paths to Lean Organization	
Transformational Whole-System Change	Continuous Improvement
<ul style="list-style-type: none"> ✓ Focused on Strategy ✓ Revolutionary ✓ Rethinking the Whole-System ✓ Big System Change ✓ Questioning why we do everything ✓ Changes in both work systems and social systems ✓ Must begin and end with the customer view ✓ Involves all stakeholders including the customer ✓ Design with the changing landscape in mind ✓ Rethinking Organization Structure 	<ul style="list-style-type: none"> ✓ Focused on Problem-Solving ✓ Evolutionary ✓ Change within a stable system ✓ Gradual & small improvements ✓ Questioning how we can best do something. ✓ May be internal process focused or customer focused ✓ Done by those doing the work at every level ✓ Process owners experiment and improve ✓ How to improve work within the current structure

If you need to align your organization and culture to your strategy, you need WSA. If the organization creates walls and barriers to the flow of work, you need WSA. If the market place is changing significantly and your organization needs to respond to changing technologies, customer demands, or regulation, you need WSA. And, if you have had difficulty implementing change, gaining commitment from your own managers and employees, you need WSA.

On the following page you will see a chart that describes the basic steps in WSA contrasted with continuous improvement. They are both good! The question is, do you have a platform, the

culture, structure, systems and processes upon which you can build the gradual continuous improvement process? If you do, proceed to that process.¹⁶ If not, please keep reading.

PRINCIPLES OF WHOLE-SYSTEM ARCHITECTURE

Whole-system architecture is an interactive planning process that relies on a dialogue between customers, employees and managers. It asks for a team of managers and employees to create an idealized design. Change management requires principles of change. In order for any dialogue to be effective there must be a *safe space* for that dialogue to occur. Agreement on principles and process goes a long way to create that safe space. The principles that underlie whole-system architecture are derived from the best business, management, and psychological theories and are combined in a unique way. It is principle-centered design.

Principles are important to the design process for two reasons. One, the process of whole-system design is not linear or simplistic. When design choices have to be made, underlying principles can help guide people to make better decisions. Two, the principles are used throughout the design process to provide consistency and flexibility. It is through the use of principles that people can continue to modify and adapt designs, yet not lose the core purpose of the design. When you write the charter for your transformation effort you must decide on your own principles.

The following principles underlie the methodology.

1. The organization is a complex system that requires alignment of its parts to the same goals and purpose.
2. Design the organization as an open-system that adapts to its environment and aligns with the requirements of its environment.
3. The design should optimize the opportunity for its members to work as natural work teams, to learn from each other, and achieve the intrinsic satisfaction that can be derived from enriching jobs.
4. The organization design should be done by the “world’s greatest experts” and those who design should implement that which they have designed. Enlarge the circle of involvement as you implement but do not lose the understanding of those who did the analysis and design of the new system.
5. Shared principles create unity of systems, processes, and people and must be applied at all levels and across all functions.
6. How you change is the change. The process used for designing the organization should be compatible with how the organization will function in the future.
7. Design for variance control at the point closest to the origin of deviation. Immediate feedback loops enable immediate improvement or solving problems that create variances. Design in feedback loops to minimize wasteful errors.

¹⁶ See *The Team Guide to Continuous Improvement*. Miller, Lawrence M. Miller Management Press, 2013.

8. The purpose of the organization is to meet the needs of its customers. Involve the customer and focus on meeting customer requirements.
9. Appreciation and understanding of human needs and values should be reflected in the design. Design for the growth of human potential including expanded multi-skilled work, job rotation, load-leveling and expanded decision-making.
10. Expect an imperfect design, with no fear of failure, but opportunity for learning and continuous improvement.
11. Design to an ideal or future state beyond your “village.” Every company and every industry is a village or tribe that assumes the norms within. Look outside and beyond for models of excellence.
12. Engage in appreciate inquiry to find centers of excellence within your organization and incorporate those lessons.
13. All complex living systems contain processes of self-organization. Allow for and promote self-organizing processes within the design.

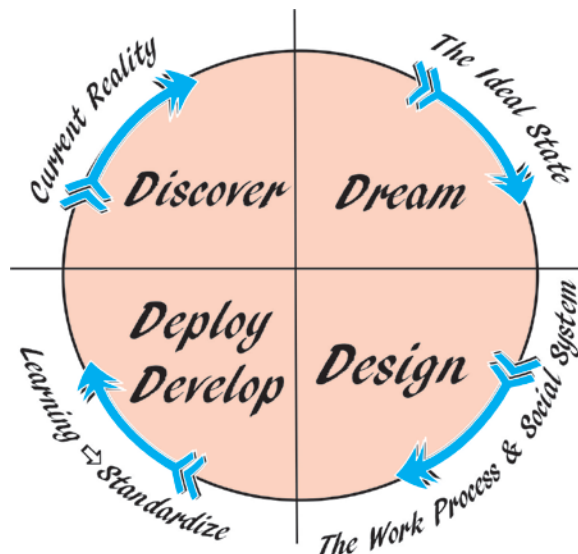
One of the first steps in the development of WSA is for the steering team, usually the senior management team to develop a charter that will guide the design teams. Part of that charter is a statement of principles that defines where we want to go and general principles of how we will get there. I recommend that you study all of the above statements of principles and then select from them or write your own statement of principles.

THE PROCESS OF WHOLE-SYSTEM ORGANIZATION DESIGN

No one can define the steps in a process of change without knowing the context - knowing what is going on in the organization, the size, the urgency and priorities, the strengths and weaknesses. In each case the process should be developed taking the contextual realities into account.

However, the following is a simple template from which one can begin planning a redesign process. One can conceptualize this as 4 “D’s” – Discover, Dream, Design and Deploy or Develop. These four steps have proven successful repeatedly, although the exact content of each depends on what is happening within each organization.

Below I will simply point to some of the common steps that have proven successful and point out why. It may appear that these steps are defined in a *linear* manner, meaning that A comes before B that is necessarily followed by C. It almost never works like that. Can you actually separate the

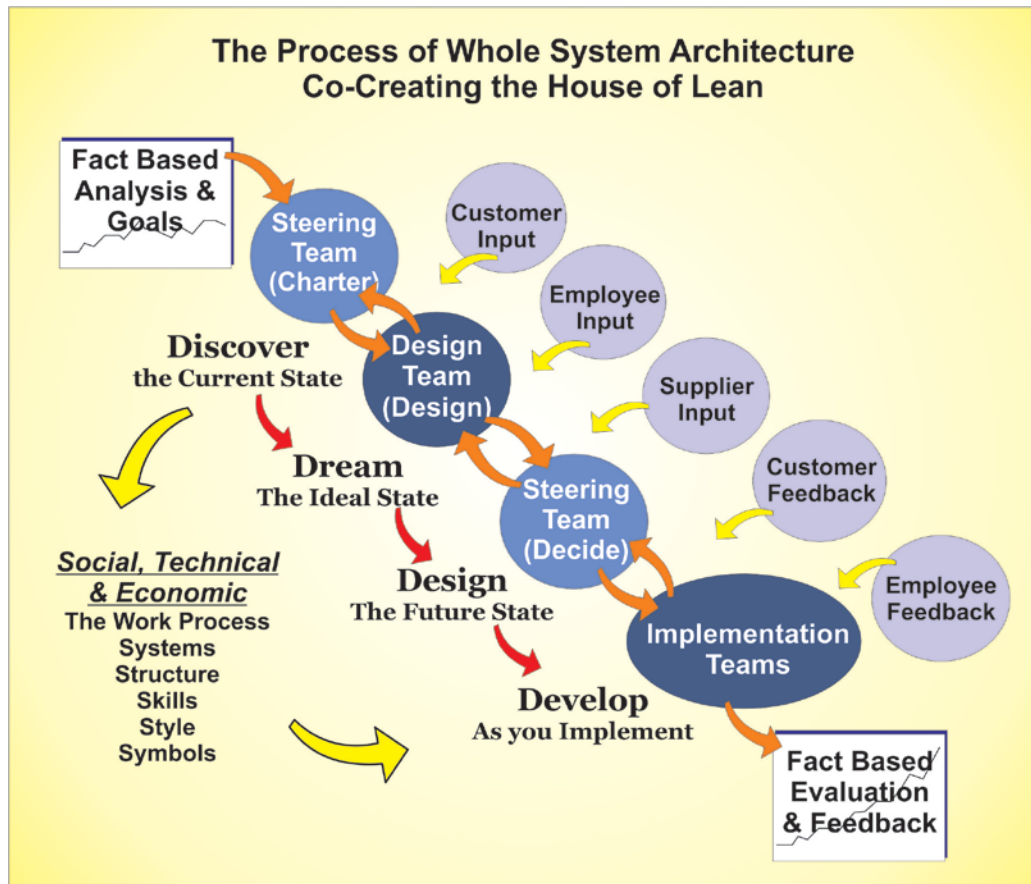


Dream stage from the Discovery stage? Surely, when you are discovering best practices it is only natural to be thinking about what the ideal might look like in your organization. It is not necessary that the stages be neatly separated. They are presented in an order that generally makes sense and it will be desirable to plan them in this order. But, it will also be important to let the process flow down a path that unfolds before it.

It is recommended that this process be an “inter-active” planning process with an executive *steering team* who gives the process direction and authority; and *design teams* comprised of members of the organization who are responsible for the following four stages of *Discovery*, *Dream*, *Design* and *Development*. These two lead groups will seek ways to involve as many as possible in the organization to gain the broadest possible engagement.

This design team will receive a “charter” from the steering team and this charter will provide clear guidance as to the objectives of their work and the boundaries of what they may and may not redesign. The design team will ultimately report back their design and recommendations for implementation.

The design team may do a number of things to gain even greater involvement from the organization, such as hold “design conferences” utilizing the Search Conference methodology developed by Marvin Weisbord¹⁷ and others. These design conferences may involve hundreds of



¹⁷ Weisbord, Marvin R. *Discovering Common Ground*. San Francisco: Barret-Koehler Publishers, 1992.

employees, customers, suppliers and other “stakeholders” who have an interest in designing the ideal process. There are often a series of design conferences. The first may be a “Discovery Conference” to search for those things that are done well in the organization and gain a shared awareness of strengths as well as needs. After other discovery there may be a “Dream Conference” to imagine the ideal future. It is possible to combine these two in some cases. There may be a third for the purpose of gaining broad based engagement in the design phase. And finally, after significant changes are approved by the steering team, there may be a Development Conference in which large groups become engaged in making plans for the implementation of the new design.

PLANNING FOR WHOLE-SYSTEM DESIGN:

Identify Steering Team: The Steering team is the leadership team of the organization. It is very important that the team that assigns the design teams, and charters the design process, is the group that has the power to decide to implement the design. If the steering team does not have the authority to approve the design, it should not be chartering a design team to study and redesign the organization.

Write a Charter: A design charter is the output of the work of the steering team. This design charter is a very important document and will tell the design team exactly what their mission is, what is expected of their work and what they can and cannot do. Here are the key elements of a design charter.

- Objectives: Why are we doing this and what changes, either in process or performance, are expected?
- Principles: What principles should be considered when designing the organization?
- Timeline and Expectations: How long does the design team have to do their work? What presentations or benchmarks are there in the timeline?
- Boundaries: There are always things that are out of bounds, even though the design team may be charged with redesigning the whole systems. For example, can the design team redesign the compensation system? Whose compensation? You will quickly find a boundary. What are the boundaries of the work process, where does it begin and end? And, are there financial concerns or a budget that must be considered?
- Core and Enabling Processes: The steering team should know which processes are core and enabling and should make this clear to the design team. A design team should start with studying the flow of the core process and redesigning that, and then design the enabling processes.

The Role of the Steering Team

- Become educated champions.
- Develop and communicate business system scorecard and strategy.
- Write charter.
- Meet as a team and practice team skills, improve your own processes.
- Meet regularly with design team.
- Serve as boundary managers.
- Promptly accept, modify or reject recommendations.

Appoint a Design Team: It is essential that the members of the design team are expert in the processes they are going to redesign. Only those who have had their hands on, who have first hand knowledge of a process, are expert in that process. The design team members must also have the respect of both the steering team and the members of the organization if the result will have credibility and be implemented. Design teams should be from eight to twelve members and should be diverse in their experience. They should have good communication and problem-solving skills, should be courageous and creative, and should have the desire to participate in a significant improvement effort.

STAGE 1: DISCOVER

Many different activities can be employed during the discovery phase, but you can generally divide them into External and Internal Discovery.

External would include anything happening outside the organization that may impact the organization or that may generate ideas for a better future. In some methodologies this is called an *environmental scan*, which has nothing to do with the weather! The environment includes the market, the technology environment, social environment and other factors that are external; as well as the extended environment of customers, suppliers and partners all create requirements and opportunities for the organization.

The internal environment begins with clarification of the guiding values, mission, vision and strategy. These principles and ideas should give direction to all of the work of the design process. It is the responsibility of the steering team to provide this guidance.

The next step is mapping the core work process. This is the most important thing that happens in the organization, despite what many people may be thinking or feeling. Getting a solid grasp of this is an essential beginning. It is beyond the scope of this brief introduction to whole-system design to go into various mapping procedures, but the design team and conferences may spend a good bit of time developing this graphic depiction of the work of the organization. As they discover this map they will want to ask questions about the organizations strengths and discover stories about how individuals or teams have done heroic things to serve their customers and improve the product or service. These stories will be important in developing the dream of the future organization.

The design team will then want to identify all of the enabling processes, those that support and make the core process successful. Depending on the scope of their effort, they may want to map these processes and follow the same steps they did for the core process.

Three different types of discovery activities can be used in this and most of the stages: individual interviews, small focus groups, or large scale conferences. The design team members

The Role of the Design Team

- Be an active responsive member.
- Seek broad engagement.
- Discover best practices and strengths
- Define current state of work and human systems.
- Imagine the Ideal process and culture (quality, speed, cost, & principles).
- Design the future or ideal state for work and human systems.
- Make presentations to steering team and others.

may develop a series of interview questions focusing first on the strengths and positive performance of the organization and then on wishes, desires, or needs. They may split up into pairs to go interview customers and suppliers, or they may schedule focus groups. It is desirable to invite customers and suppliers to conferences for employees. I have seen customers speak to conferences of more than a hundred employees at Corning and other companies to give their views on what the company does well and what they would like to see.

STAGE 2: DREAM

There are three BIG questions that can help members of the organization develop dreams about their future:

- Considering our mission as an organization, what would be the ideal service or product for our customers? What would this look like, be able to do, and how would it make our customers feel?
- What would make this the world's best place to work while we accomplish our mission? What would it feel like? What about the work setting would provide the most encouragement and development for the members of our organization?
- How would the first two questions make us a great business, and help us achieve great business results?

Around each of these three big questions it will not be hard to image many other questions. There are numerous exercises and fun ways to explore the dream. For example you can ask individuals or small groups to write an article for the Wall Street Journal that is doing a story on your company ten years from now. The WSJ is writing an article about your company as a success story that will inspire others. The story should reflect everything you want the company to be, what you hope you will be able to say about the company. You can also call upon the creative imagination of members of your organization by asking them to develop and act out skits that reflect the dream of your future company. These skits, for example, could be at a cocktail party. The President of the United States, ten years from now, is having a dinner and cocktail party for winners of the National Quality Award. As a member of the team who helped make this happen, you have been invited. Now write a script and act out the conversation where you are explaining to others at the cocktail party what you did that made your company worthy to win this award.

These are just examples of some of the fun things you can do to encourage the development of the dream. Remember that people dream in groups. In other words, one person's story stimulates ideas in another. Have you ever watched a group sitting around and imagining what could happen together? They feed on each other, laugh with each other, and from the dialogue comes a collective dream that none of them alone would have imagined.

Out of the discovery and dream stage it will be desirable to form a "consensus dream." Some elements of this may become clear in large group meetings, but it will probably take more clear form in meetings by the smaller design team. Out of all the dreams, some of which may be far out into left field, we now need to develop a dream that becomes our real target.

STAGE 3: DESIGN

Based on the discovery and the dream, it is now time to begin the design process. While the dream phase put practical concerns and all forms of skepticism aside; now is the time to begin to get practical. Now is the time to say, “Ok, what can we actually do that will make that dream come true?”

During the Discovery and Dream process you have generated a long list of things you would like to change. Now you have to organize those and start designing in some logical manner. The beginning point should be the core work process. It is best if they start with a clean sheet of paper and ask themselves the question “if we were starting a new company and had no restraint, what would we design to be the ideal process?”

This should include the following:

- Cycle time analysis: what would be the fastest, most interruption free path from beginning to end of the process?
- Quality – what do we do well and what are the variance from standards and customer expectations? Along each step in the process, how could we design features that would eliminate or reduce the potential for quality problems?
- Principles – where does the process either reflect or deviate from our principles? How can we design our principles into the process?
- Cost – where are the major costs in the process and how can costs be reduced while improving throughput and quality?
- Eliminate waste – are there any unnecessary steps? Are there ways to combine steps? Does the product or service ever stand still as it makes its way through the process? How can these delays be eliminated?

Since the organization exists for the purpose of creating the output of the core process, the enabling processes (human resources, information systems, etc.) should be designed to support and optimize the core work process. At this stage the design team may either redesign those processes (they may not have the right people on the design team and it may not be within their charter); or, they may create process requirements for the enabling processes. The core work process is the customer of those processes and should be clear in stating what it needs in order to optimize the core work.

Once the core work process is designed into its ideal desired state, the design team begins to address the structure and systems around the process. There is one BIG rule as they begin to do this. Design the organization from the bottom up! In other words, what is the organization of groups at the first level, where the work is done, that will maximize the probability that the work will be done in the best possible way.

This is the beginning of structure. The structure of society begins with the structure of the family. The beginning of organization structure should be the design of the small work groups who will manage and improve their work on a day-to-day basis. After the first level groups are formed, the question is then asked “What help do they need to do their work in the best possible way?” Think about how this question is different than asking “How many managers are needed?” If you ask what help is needed you will get a very different answer, and it will be a more “lean” answer. If

the right training, information, tools, decision authority, and coaching are provided, you will find that far less management is needed.

Similar questions are then asked about all of the systems in the organization. For example:

- How can the information systems most help those who do the work?
- What method of presentation and delivery of information would be most helpful to the teams?
- What training systems would most enable teams and individuals to do their job in the ideal way?
- What methods and patterns of communication would be most helpful and encouraging to employees?

The design team will identify all of the relevant systems that support the core work, and will then develop a list of questions and issues to be addressed in their design work.

Design teams are always confronted with the issue of how much detail to get into. An analogy has proven helpful. You are designing a house. When designing a new house you need to decide where the walls go, where the staircase is, and where electrical wires need to run. But, you do not need to decide the color of the walls, or the carpet, or where the furniture is going to go. You can leave those decisions to the new owners who will move in. In fact, allowing them to make these decisions will give them a feeling of ownership for the new house, and encourage them to care for it and improve it. Similarly, there are “walls” and then there is “furniture” when doing an organization design. The design team should ask themselves, are we doing furniture or walls, when they begin to feel that they may be descending in to excessive detail.

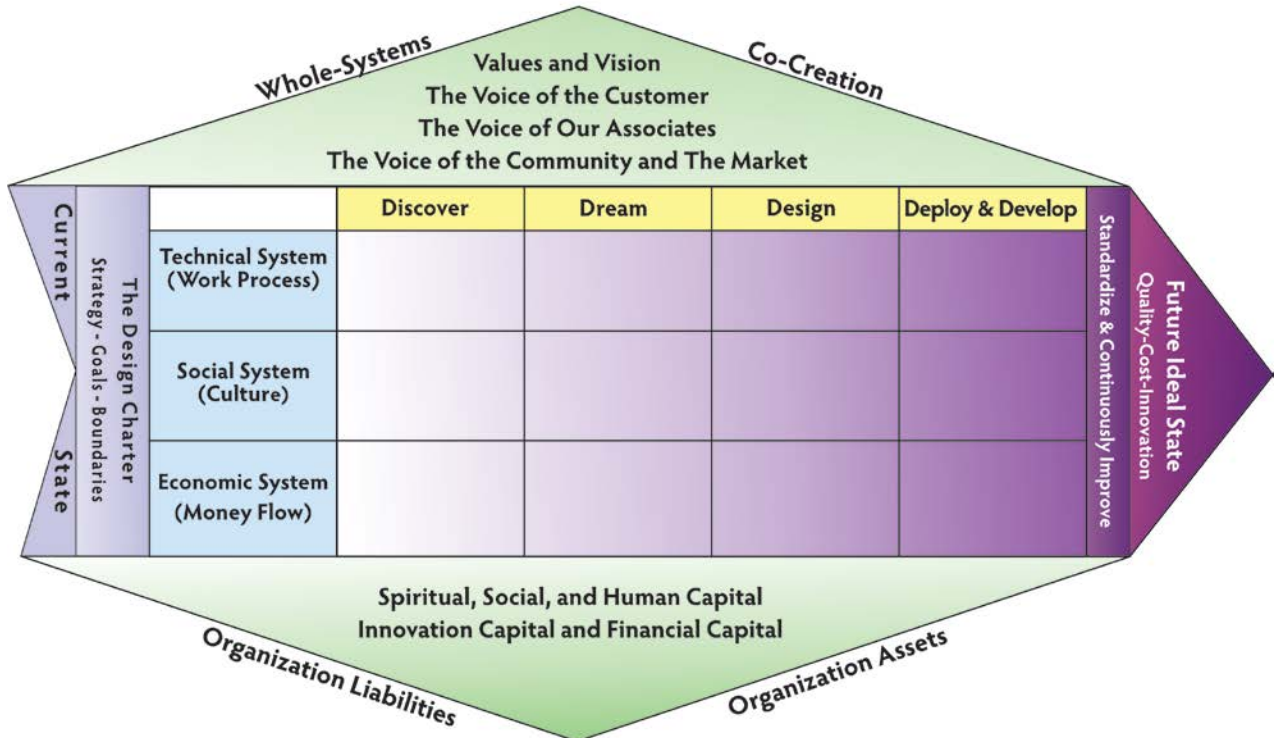
Stage 4: Deploy and Develop:

Rather than think of any design as complete, or finished, it is best to acknowledge the inevitable reality that you have only done the best you could do at this time. In short order, as groups set about implementing the new design, they will quickly find ways to improve it. Rather than create any resistance to this, it is best to plan for it, encourage it and hope that the process of implementation is one of on-going development and learning.

Once the design team has completed their work, they will first present that to the steering team for their reactions and approval. They may have a large group conference where they present their design as a proposal, a tentative design, and then get the group to react to this and suggest improvements, point out possible concerns, and suggest ways they can help the implementation of the design. This again, increases the engagement and commitment of the organization.

How the new design gets implemented will depend entirely on the nature of the new design. However it is generally the case that one or more implementation teams are appointed to take responsibility for components of the design. Depending on the specifics of the design, the nature of

The System of Managing Change



the implementation and implementation teams will vary. There may need to be an IS/IT implementation team if there are a large number of information system issues. There may be an implementation team to focus solely on the physical relocation and set up of a manufacturing plant if that has been redesigned. Similarly there may need to be a training implementation team or one for other human resource issues. The implementation teams should be appointed by the steering team, should be given a charter based on the design, and should report back their progress to the steering team.

Having observed more than one hundred whole-system design projects roughly following this model, it has always surprised me that an enormous amount of energy is put into the process of design, and then there is a let-down when it comes to implementation. The value of the design can be lost if similar energy is not invested in the implementation itself. The implementation must be managed. Good project management skills now need to be used.

It is important that everyone involved has an attitude of continuous improvement when implementing the new process, systems or structure. It will never be 100% right! It will be your best shot at this point in time. However, once you start implementing the new design you will start learning. You will find that some of the pieces don't fit together perfectly, or you may find you have not thought of some element of the process that also needs to be aligned with the new process you have designed. If you view these discoveries as mistakes or failures, you will stifle the learning process. It is much better to understand that these are inevitable and the natural process of learning that occurs during implementation.