Making the Move Toward a Learning Organization:

A Classic Journey of Change

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Learning from experience. Most of us would agree that it's the best way to learn, as learning from experience creates a deeper, more memorable understanding. Unfortunately, it can be a very expensive way to learn -- unless you can benefit from the experience of others.

In the last decade, I have observed thousands of employees at every level of responsibility gain a better understanding of how their role fits into and affects the manufacturing operation of their plant, through the use of a game designed to change the way workers view and perform their jobs. What I've discovered is, in general, many organizations are trying to streamline their processes by encouraging more self management, or at least trying to empower workers to use more of their potential in the work environment. Effective and efficient use of workers' time and intelligence is key to capitalizing on the excellent technology that exists today for getting work done.

In 1987, I was part of a maintenance improvement team at DuPont, charged with benchmarking more than 140 plants within and outside the company, to determine how to improve the reliability of our manufacturing facilities. Out of this effort, we created The Manufacturing Game® (TMG), using a System Dynamics model of the benchmarking data. The game is a tool used in a two day workshop to help employees, from line workers to the plant manager, understand how to pursue the higher operating domains that we observed in the benchmarking studies. The game is a board game using poker chips, play money, and dice to simulate the operation of a manufacturing facility. The simulation allows people to experience in two days the trials of taking a manufacturing facility from reactive to proactive performance over a six-month period. The participants experience the fact that defects are the root cause of most of their real world problems. They come to understand that defect elimination is the only way to solve those problems.

Since the introduction of the first game at DuPont, more than 20,000 workers at over 80 companies worldwide have participated in TMG workshops. What we've seen over this time is that one key factor in the framework for true, large-scale organizational change mirrors the classic Hero's Journey, so well documented in historical studies, popular culture and psychology.

In a nutshell, the Hero's Journey is a personal journey of learning, moving through three stages, facing obstacles and challenges along the way, and breaking through two thresholds to reach the end. To be successful, a person or organization must master each of the stages and cross the thresholds.

Erich Jantsch, author of Design for Evolution, proposed that the reason the “Hero’s Journey” is so prevalent in mythology is that it represents the human experience of participating in an evolution to a higher state.

The Framework for Change

The Hero’s Journey itself is not the silver bullet for sweeping organizational change. However, when combined with the traditional framework for organizational change created by Kurt Lewin in 1952, the result is a series of processes that can help an organization break through a crisis to the next level of excellence.

Lewin said that changing an organization requires three stages: an action to unfreeze the organization and make it open for change, an action to implement change and finally, an action to make the change sustainable, or refreeze, in the new mode.

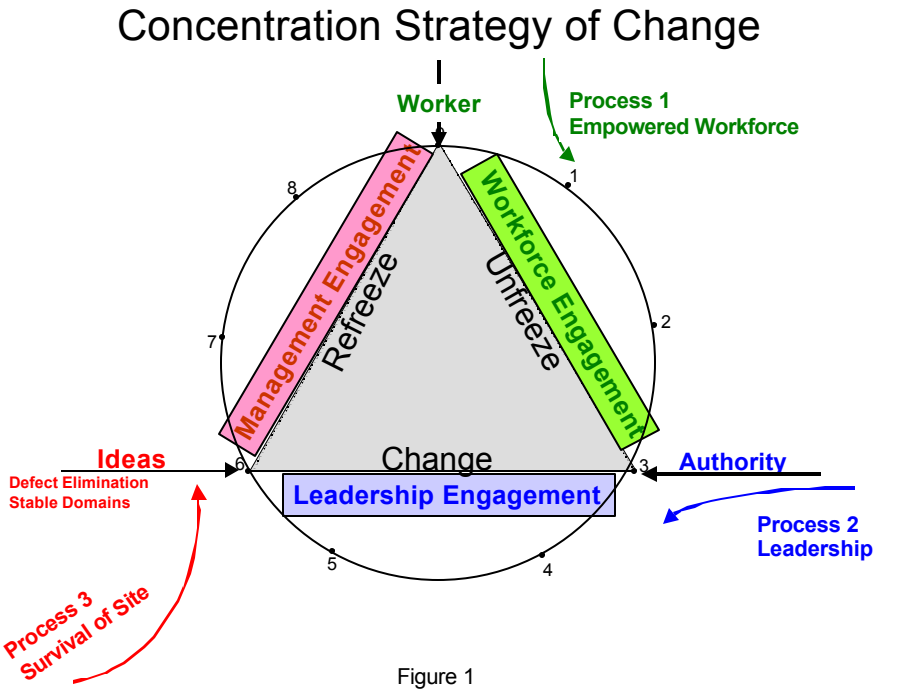

Figure 1

Many times, the action that unfreezes an organization is a crisis. Most workers are reluctant to impose change upon themselves, without a good reason – so when a crisis occurs, people are forced to recognize the need for change.

If the crisis is a clear and present danger, the fight or flight instinct kicks in and becomes the motivation for change. People either try to change things to

eliminate the crisis, or they flee – flee involvement in the crisis, flee the department, or leave the company altogether. Any of these actions unfreeze the organization and create the opportunity to go to the next stage of the change. An example of this occurred in 1995 at the Lima, Ohio British Petroleum refinery now owned by Premcor.

British Petroleum's Lima, Ohio Success

The British Petroleum refinery was historically one of Lima, Ohio's largest employers. The plant had employed generations of Lima workers, but was facing closure in the mid 90's as productivity and profits fell drastically. As a result of this poor performance, BP was unable to find a buyer for the plant, and all 450 workers expected to lose their jobs within a few years.

During this time, the Manufacturing Game had been implemented as part of a plan to improve plant maintenance by empowering the workforce-- the first process in figure 1. Although the plant was moving towards closure, managers decided to proceed with the Game as planned. The results were immediate, impressive, and enduring: within the first year, reliability was significantly improved; maintenance costs drastically reduced, and operating profits were dramatically increased.

One excellent example of the approach to defect elimination came from the butane action team. The team worked on a defect in the butane sphere which it felt was a safety hazard. For years, operators and managers in the OM&S area had complained about the pressure of the spheres, which increased during the hot summer months. Operators would open a valve to the flare to reduce the pressure – and although they and their managers complained about the potential hazard, the problem was never addressed.

Once the team took the lead and examined the defect, they realized the compressor oil cooler was too small for the job at hand. They found a replacement in the plant's 'bone yard', had it refurbished, recruited an engineer to do a safety check, and then installed it. The result: the pressure on the vessel immediately decreased, the valve to the flare could be closed, and the annual cost savings of the recovered butane was $1.5 million.

Leadership at every level

The second process, to create success in stage two where the change must happen, is the leadership process. The distinction we are making between leadership and management is that leadership is about coping with change where as management is about maintaining order. This distinction was taken from the work of John Kotter who has studied management and leadership for 40 years at Harvard. The best process for leadership that we have seen is one

based on a framework articulated by Peter Senge in his book *The Dance of Change*.

In Senge's framework, three types of leaders are identified. Executive leaders who provide the resources for the change, operational leaders who provide the workers time and motivation to make changes and network leaders who find and refine ideas to accomplish the changes. Each of these leaders has a unique source of power.

While authority is the source of power behind the executive leadership role, the operational leaders get their power from the control of people's time, and network leaders get their power from the ideas they bring to the workplace.

The third process in figure 1 is the one that creates the crises. In the case of Lima it was survival of the site as a refinery. This was a very strong driver since the individuals at the plant had their personal identities at stake. Many of the employees were native to Lima and did not want to leave for other work. This created a strong motivation to save the plant.

The refinery now attributes almost $40 million in annual margin improvements to its reliability improvement efforts; in 1998, the again productive plant was sold to Clark (which later changed its name to Premcor) and 400 jobs were saved.

The Hero Journey

To guide the whole initiative of organizational change, it is important to have a good planning and adjustment structure to deal with the inevitable bumps along the road. The Hero's Journey is completing a journey and gaining knowledge through adversity and experience. It also fits the framework of Kurt Lewin, in that it has three stages separated by thresholds that have to be crossed.

The Hero's Journey is a series of twelve experiences that Carol Pearson, author of *Awakening the Heroes Within,* calls archetypes. These twelve experiences are divided into three groups of four archetypical experiences. The first four experiences, the *departure* stage, are about creating the skills and capacity to function in the new world. The second set of four experiences, the *initiation* stage, is about creating the capacity to be the "hero" in the new world. Finally, the last four, the *return* stage, are about mastering the situation you encounter in the new world. It involves performance at a higher level on a daily basis without much risk of backsliding so that this level of performance then becomes the new natural order. This journey pattern has many applications in literature and entertainment from Star Wars to *The Wizard of Oz*. The hero idea is not just the brave warrior but also the brave Dorothy returning to Kansas to take care of Aunt Em.

The Lima Story as a Hero's Journey

We use the cycle of the Hero's Journey to help us facilitate the Manufacturing Game workshops. We have found that this cycle, articulated by Joseph Campbell in *The Hero with a Thousand Faces*, represents well the experience of participants in our workshops. It occurred to me that this pattern should also pertain to larger organizational changes. The Lima BP refinery is the first area we started working with outside DuPont and the one that has gone the furthest in applying The Manufacturing Game process to the whole organization. Each section below is labeled with the titles used by Campbell to identify the step of the journey. I have also given the name of the archetype that corresponds to that step of the journey as articulated by Carol Pearson in her book.

1- The Call (Innocent Archetype)

In the 1980's, the people who worked at the Lima Refinery considered it the "Queen of the Fleet" within the Sohio Company. This pacesetter refinery, built by John D. Rockefeller in 1886, was supplying fuel and petrochemical feedstock to the Midwest US market that took pride in its local supplier.

When crude prices began to rise and the premium for West Texas sweet crude jumped, a round of profit squeezing hit. Lima began some drastic cost cutting to survive, and by the late 1980's this cost cutting began to take its toll in poor performance of the equipment. Everyone at the site was feeling the hectic pace of trying to keep up with the deteriorating facility.

2- Refusal of the Call (Orphan Archetype)

This frustration lead to a re-engineering effort in 1993 to recapture high performance. The architects of the organization knew a drastic change would be necessary to regain the pacesetter type of performance. They redesigned and renamed all of the jobs, so employees would not be able to behave in the old ways and moved most of the salaried employees to new positions where they could not continue in their old habits. This included bringing in a new plant manager and maintenance manager and putting operations managers on each shift. The idea was for the night shift management to run the refinery to produce maximum value and the day support people to work on maintaining and improving the facilities.

The result was disastrous. The majority of employees hated their new jobs and were frustrated as they tried to fit their old behaviors to the newly designed positions. People hoped for a quick return to the old roles where they were comfortable. The management, however, decided to give it a chance to work and did not slide back into the old roles.

3-Gathering of Allies (Warrior Archetype)

In May of 1994, a rotating equipment specialist, a first line supervisor of maintenance training and an organizational change agent (who was working on continuous improvement ideas) introduced The Manufacturing Game workshop as a pilot to the plant. . Two action teams on rotating equipment improvement were created.. By the fall, these teams were very active on defect elimination and used a refinery turn-around as an opportunity to eliminate some very deep rooted causes of defects in some of the rotating equipment.

In November 1994, at the urging of several self-appointed champions, a decision was made by the plant management to have 80% of the employees experience The Manufacturing Game workshop and create action teams to eliminate the defects throughout the refinery. This program was initiated in January of 1995 with two workshops per month of 36 people each. In one of the early workshops, an action team of operations and maintenance training supervisors, and human resource employees took on the task of finding projects for additional action teams to attack.

4-Crossing the Threshold (Caregiver Archetype)

However, following 5 months of workshops there were 24 action teams launched -- and it was getting more difficult for the organization to cope with the increased activity. A decision was made to pause in the workshops to try to put some order to the chaos created by the many action teams. The summer was spent scouting options for creating order in the action team process. Several things were tried that resulted in creating a vision of how the refinery creates value and creating a process to engage people in adding to this vision. A group was created to foster this process and to capture the organizational learning from action teams. This group, the Continuous Improvement Forum (C I Forum), saw its role as learning from successful *and* failing action teams, and creating the inspiration the organization needed to pursue the vision. The C I Forum created a number of tools to pursue that vision and create the inspiration.

5-Reflection (Seeker Archetype)

One of the tools created by the C I Forum was a one-day workshop that used a skit and some systems dynamics models to revitalize the spirit of defect elimination. Every employee participated in the workshops, which in turn generated 290 new potential projects for defect elimination. Everyone in the organization contributed to this assessment of the state of the refinery and the opportunity for improvement.

Also included in these workshops was an articulation of the three rules that the plant management felt were necessary for success in the new paradigm of Proactive Manufacturing. These were:

1. Don't just fix it, improve it.

2. Focus on value, not cost.
3. Maintain and enhance your license to operate and reputation.

With these new rules as guidelines and the previous experiences of all the employees with action team work, people were encouraged to create their own action teams to make improvements in the areas that they recognized as defective.

Not all action teams succeeded in making improvements. This was expected. Not all ideas for improvement work out because of unforeseen defects. This was not considered a failure if the amount learned by the individuals and the organization was worth the energy people had put into the actions.

6-Road of Trials (Destroyer Archetype)

Things were proceeding fine until all of a sudden, in January of 1996, BP announced that the Lima refinery would be put up for sale. This shock to all employees served as a pinprick in their balloon of hope for saving the refinery. It destroyed people's illusions about good hard work keeping the refinery going for another generation. People were yanked into the realization that the refinery was no longer a strategic asset for BP.

7-Celebration - Call to Return (Lover Archetype)

Later that year, the 100 managers, supervisors, and specialists at the refinery were going through workshops on Leadership of Change using an electronic version of The Manufacturing Game when the announcement of the closing of the refinery came in. BP said that they were not able to find a satisfactory buyer for the refinery and did not see any value in continuing to run it beyond the two years it would take to get a new supplier of gasoline.

At first people questioned the need to continue with defect elimination, but after some thought they decided it still was the best way to run the refinery regardless of its life expectancy. Employees soon realized that what they had accomplished was very significant, and better than other traditional ways of approaching organizational change. Instead of pursuing better planning to deal with defects, they were eliminating the defects to avoid the need for the planning and scheduling to take the defects out after the fact. They realized this is the essence of proactivity to eliminate the source of the problem instead of solving the problem.

8-Refusal of the Return (Creator Archetype)

At this point people had to make a decision about their future. Should they stay with what some considered a sinking ship, or should they escape to

safer ground? As each person decided whether to stay or go, they created their own future. Their new slogan “there is no cavalry” became very personal.

9-Magical Flight (Ruler Archetype)

For those who decided to stay with the ship, a new spirit emerged. They realized that they needed a future in Lima and should take responsibility for creating that future. Some immediate actions were taken to make sure they could replace the void created by the loss of skilled, talented workers. That loss heightened the sense of urgency to perform defect elimination and created a clear focus for the people who remained. Their decision to stay created the clarity.

10-Crossing the Return Threshold (Magician Archetype)

Then providence moved to help those committed people: BP decided to commit to restoring the site and to create the Lima Integrated Complex as a site for new businesses. The company rolled out a vision to dismantle the refinery equipment and restore the site to an attractive place for new business. BP also created a fund to help attract new businesses and to help the local community survive the financial shock of the refinery closing.

11-Walking in Two Worlds (Sage Archetype)

Once this was set in motion, BP found the Lima site to be attractive for a new Butanediol Facility. Now the Lima site is living in two worlds. One world was the proper ending to a long and prosperous life of a great refinery. The other world was the birth of a new plant and hopefully a great new business for BP.

12-Freedom to Live (Fool Archetype)

Finally, everyone was looking forward to the day when the revamped Lima complex would be fully functional as a truly high-performance organization on a beautiful plot of land that includes several new businesses struggling to come to life. Like a white knight out of a fairy tale, Clark Petroleum noticed how well these heroic people were running the refinery, and made an offer to buy it from BP. Thus began the rebirth of a great refinery run by 400 heroes who had personally saved the refinery from extinction.

While the story of Lima is particular to the plant’s history, we think this set of twelve archetypes accurately reflects the nature of the feeling for people as they experience a transformation to a higher level of performance and can be used to anticipate the bumps in the road. Recently, we discovered how the Hero's Journey integrates with the framework shown in figure 1. John Bennett said that the framework in figure 1 could be used to represent any experience that proceeds to completion.

The Framework of Experience

To explain the connection of the Hero's Journey and the processes in figure 1, we need to articulate the rest of the process to empower the workforce (figure 2). In our approach the first step is to start running

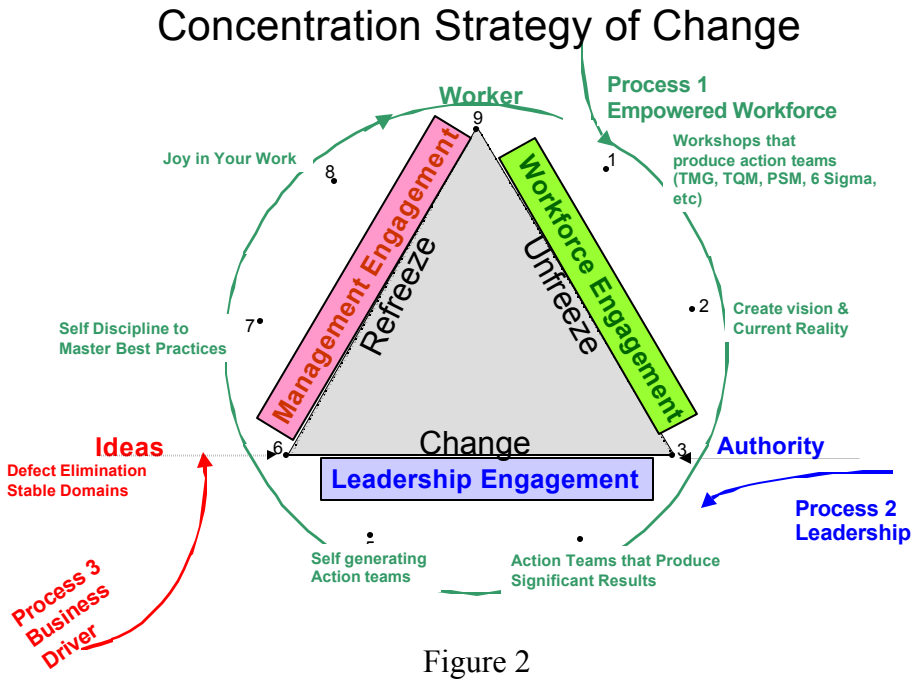

Figure 2

workshops with the intent to have at least 80% of the workforce attend and participate in action teams to eliminate defects. This is the functional aspect of the transformation. We have found that empowering the workforce is best done at first by getting them to understand the structure of their work as a system. This gives them the power to improve the functioning of their plant, which is the essence of the craftwork in a refinery or some other manufacturing operation. This is a discovery we made at DuPont using System Dynamics modeling of our facilities. The nature of the system is a cross-functional interaction of people and equipment with the purpose of producing products that have more value than the raw materials, the people time, and the investor money that is needed to produce that product. In a large organization, it is sometimes hard to see that structure when most organizations are designed functionally. The Manufacturing Game® is a micro-world that allows people to experience this structure and discover for themselves the nature of cross-functional cooperation needed to master the best practices.

The next step in the journey is to create a vision of the end state you are trying to achieve. This step, however, requires a leadership process to succeed. The management must participate with the workers to create this shared vision. To see how this works, we have to add the steps in the second process, which is leadership (figure 3).

The first step in the leadership process is to have leadership forums like the CI Forum at Lima. What we find crucial here is to have a vertical cut and a cross-functional membership in this forum. We think that all three types of leaders need to be involved; executive leaders, operational leaders, and network leaders as proposed in Peter Senge's book *The Dance of Change*.

In our view, the role of executive leaders is to provide the money and resources needed, the role of the operational leaders (line leaders in *The Dance of Change)* is to provide the time of the workers to achieve the change, and the network leaders provide the good ideas to achieve the results. With these definitions of leaders, we find that everyone in the organization can display each of these types of leadership. Anyone who has discretion to spend money is being an executive leader when they authorize spending money on a particular idea. Also everyone can be an operational leader if they have any discretion in how worker time is spent. Most organizations allow some discretion in how people spend at least some of their own time. By the same token, anyone in the organization can contribute a good idea, which makes him or her a network leader.

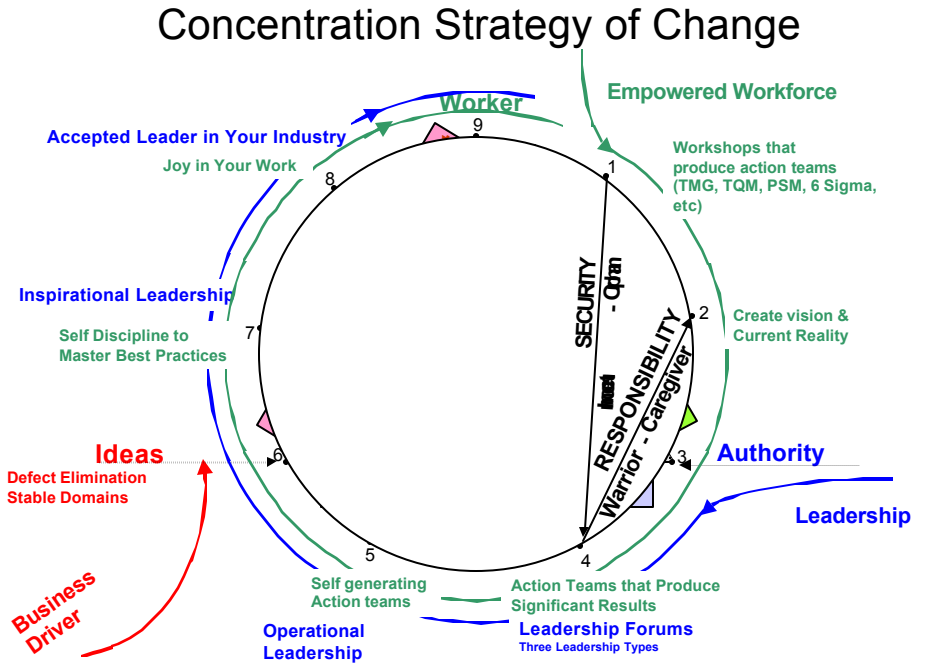

Figure 3

The connection between the leadership process and the empowered workforce process is through the Hero's Journey. From the perspective of the designers of the change, what needs to happen at this point is for the leadership to evaluate the significance of the changes being created by the action teams. This allows them to evaluate what might be possible in their particular situation. If the action teams can only improve the equipment in the lunchroom, the vision will have to be very small. If, however, the workers are showing capacity to eliminate defects which can make a significant improvement to the operation of the refinery then a much larger vision can be achieved.

In the Hero's Journey, this is the play of the first two archetypes; the innocent and orphan. In figure 3 we have shown these as a line from point 1 to point 4, which is the perspective of the designers of the change effort. The innocent aspect is in the choice of the action team projects. Some are much too ambitious and have to be reduced or abandoned given the resources, time, and ideas available for the change. Some are too small and don't stand a chance of making a significant difference. The successful ones tend to reinforce the innocent feeling and the failures tend to reinforce the orphan feeling.

It is important at this point to let that dynamic play out long enough to evaluate the capacity of the organization to change. One way we propose to do this is to let the teams self facilitate. If you try to make every action team successful, you will not allow people to fully experience these very important archetypes.

Once it becomes clear that there is a capacity to make a significant difference with action teams, the leadership process can start a dialogue with the workers about a shared vision. From the perspective of the designers of the change, this dialogue is the experience of the warrior and caregiver archetypes. It is the discussion about "what do we really care about?" and "what are we willing to fight for?" Our experience is that this vision evolves over time rather than coming out as a product of a particular event. Each person gets a chance to contribute to the leadership forum, both as a communicator and through his work product. Part of this process articulates the current reality, as well as the vision for the future.

From the designers' perspective, at this point we need to look ahead to where we want to be at the end of the journey. Figure 4 shows the Hero Journey lines for this forward look as a line from point 2 to point 8. Here we experience the seeker and lover archetypes. In short, we experience what we seek to become and what we would love to be.

Once this vision and current reality become clear, the process of empowerment proceeds through point 4 to point 5, where we see the creation of self-generating action teams. If the organization is truly changing its culture, creating action teams to eliminate defects must become a way of life. The number of action teams generated by the workshops is not nearly enough to eliminate defects in a large organization. We have found that on average each employee needs to participate in at least one action team a year for the first three years to make large-scale change. This level of commitment seems to be enough to create a habit of defect elimination for most people.

The habits of people determine the level of performance in the long run. From the perspective of the designers, the view needs to be from point 8, the end point, back to point 5. If we are going to achieve the desired final state, there are things in our current culture and practices that have to be destroyed, and new

things need to be created. The authenticity of the experience of the destroyer and creator archetypes is key here.

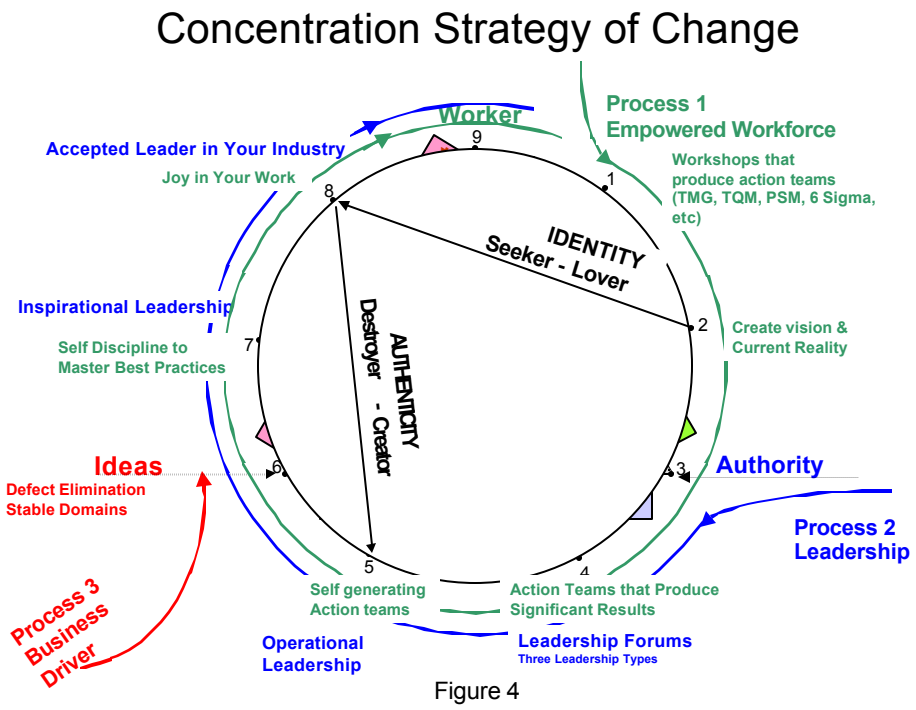

Figure 4

In the journey so far, we were able to cross the first threshold at point 3 by bringing in a leadership process and authority figures. At point 6 we reach the second threshold that has to be negotiated. The nature of this change is to refreeze the organization at the higher level, and we transition from a leadership engagement to a management engagement. As mentioned earlier, the distinction we make here is that leadership is about change and management is about order. Therefore, we will have to put order back into the everyday process in the third stage of the change after point 6. We must understand at this point which things will drag us back if we don't destroy them now. Plus, we have to determine what new things we must create to sustain the new level of performance. At this point we even have to destroy some of the tools that have taken us this far along the journey. In our case action teams and defect elimination must be abandoned. These are tools of change and are no longer needed. The leadership process needs to change to a management process.

To get to step 7, we have to look from point 5 to point 7 as shown in figure 5. The pair of archetypes here are the magician and ruler archetypes, which Carol Pearson associates with power. We think that a transfer of power has to happen at this point if the workforce is going to be truly empowered.

We therefore think that some form of self-management must enter at point 7 as the means to institutionalize the change. This is only true if the first process is to empower the workforce. There are other ways to approach a change of this

magnitude that does not use empowering the workforce as the first process. We will later show the model for the change at DuPont, which did not start with empowering the workforce and needed a different transition at this point. The ruler archetype here is the experience of creating order in your environment. The magician archetype is the experience of transformation.

The challenge of the designers of the change at this point is to find a creative way to transform the power structure of the organization in a way that

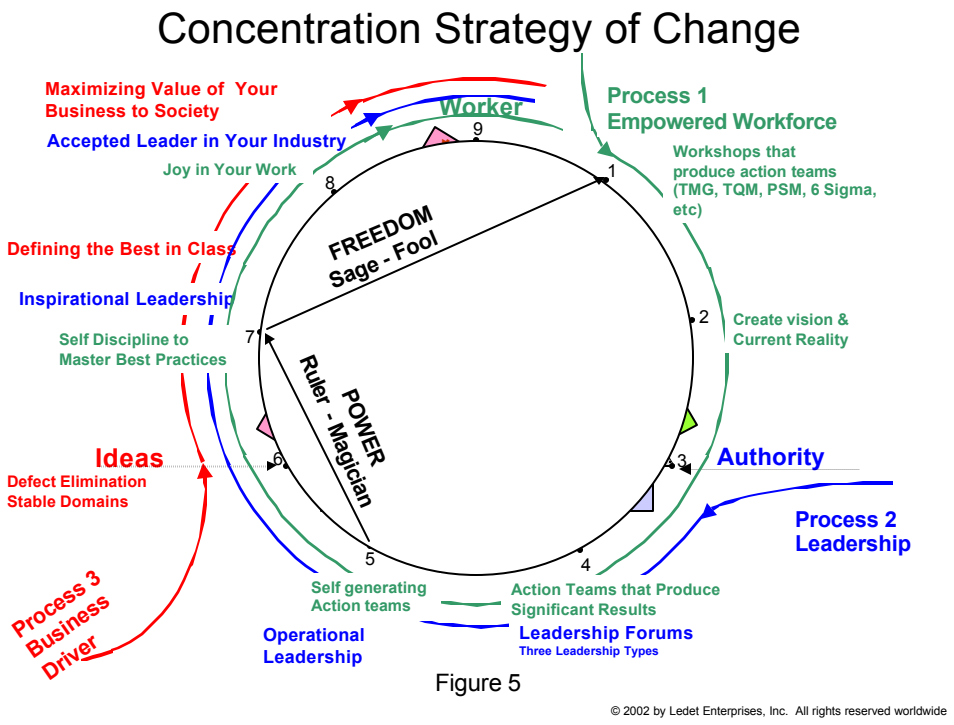

Figure 5

puts order to the new way of working. Of course, this will not work unless there is truly a business driver for the transformation of the power structure in the organization. This is where the final process comes in. This process has to create the will in the organization to make this drastic change. If there is not truly a business need for the change, it will not happen. This is the fate we see for many change efforts.

However, if there is a need and the transformation is made, it tends to set new levels of performance for an industry that everyone else has to scramble to reach. From the designer's perspective, this is an experience of the sage and fool archetypes. The sage archetype has the perspective of walking in two worlds since he or she has seen the old way and now the new way, which creates some learning for the next round of upgrade. The fool archetype is the feeling of enjoying the journey and has a flavor of the innocent archetype for the next journey but with the new wisdom gained in the last round.

An Idea-focused change: DuPont

An organization can also create its own crisis, as was the case with DuPont in the mid-1980s as the company merged with Conoco. The new majority stockholders were ready to see an improvement in the financial chemistry of the company. That clear directive resulted in the formation of a Corporate Maintenance Leadership Team in 1987, to find ways to make its share of an astonishing $1 billion in company-wide cuts.

Gathering benchmark data from other organizations, both direct competitors and companies in totally unrelated fields is a good way to unfreeze an organization. Some people, however, think that benchmarking is all that is required to get people to improve. Typically, the benchmark data does not tell people how to achieve the results that the benchmarked companies have achieved. The classic example is that the benchmarked companies have lower costs so people cut costs in any fashion and without regard to the mission.

The DuPont team studied 15 of America's most prestigious companies to gather data; they also examined dozens of DuPont's own plants. The benchmarking showed a clear path to improvements for maintenance – that the best companies in the United States performed planned maintenance.

The DuPont benchmarking was continued over several years and extended to Europe and Japan. Eventually there were 140 plants benchmarked with a wide variety of approaches including award-winning plants in Europe and Japan. Digesting all of this data was very difficult until we recognized the pattern shown in figure 6.

What we noticed was that plants tended to be in one of the domains in this chart. A plant was either in the reactive domain, where they waited for something to happen and then responded; or it was in the planned domain, where it tried to anticipate events and prepare ahead of time to avoid the chaos of breakdowns; or it was in the improved precision domain where it looked for the root causes of the failures -- the defects -- and removed them before any deterioration of performance could happen. The other two domains, regression and world-class, were added later to include plants which were being abandoned and those truly trying to create a new level of performance.

On the chart we have articulated some of the key practices that are common for each domain. We found that there was a range of performance for each domain, depending on how well the organization executed the practices, but the behaviors in the organizations were basically the same. For the regressive domain, people tended to not fix things because they perceived that it was not economic to do so. In the reactive domain, they only responded when something broke because it was then clear that something had to be done to get back to normal operation. In the planned domain, the focus was on planning and control of their future by using all the techniques available to predict the future and have a plan to eliminate the surprises.

Domains of Operation

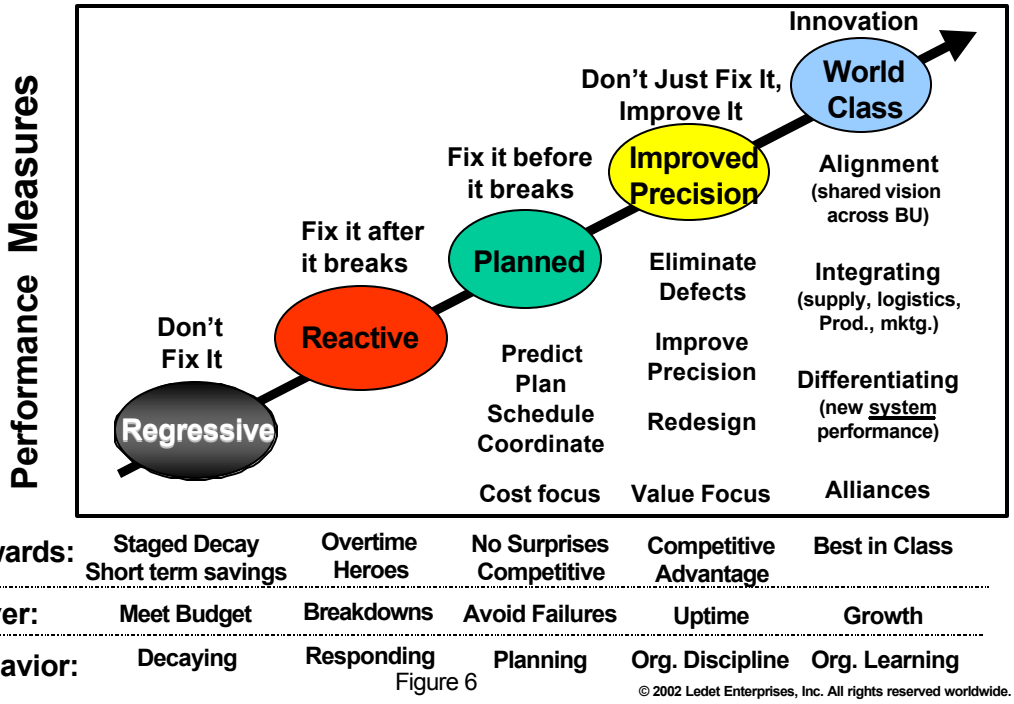

Figure 6

In the precision domain, people recognized that the source of unreliability were the defects that are created in the equipment, processes, and policies. The behavior here is to eliminate those defects early when they are easy to remove and to eliminate the root causes of these defects. In this fashion people in the improved precision domain did their work so precisely, they created the bulk of their future and no longer needed to guess or predict it.

Finally, the world-class domain was added to include those organizations that are the innovators of the future. While we did not see any organizations clearly in this domain, the ones who had succeeded in getting to the improved precision domain were looking for improvements and had the resources and skills to pursue new sources of value and take the risk to innovate to get there. We found these organizations in general were trying to create opportunities to use more of the potential of their employees. The behavior associated with these organizations is organizational learning. The premise here is that the world is changing faster than ever before and is not likely to slow down. Therefore, maybe the only competitive advantage you can have is how fast your organization learns. The organization that catches on to the next change first will always have a competitive advantage. One of the recommendations for organizations to become a learning organization is to create practice fields to

learn new behaviors in simulated situations instead of waiting to discover them in the real world. The Manufacturing Game® is one such practice field for discovering the value of defect elimination and cross-functional action teams as a means to pursue the improved precision domain.

While we learned of these five domains of operations at DuPont, we were unfortunately not able to apply all that we learned. In retrospect, we were only able to achieve the planned domain. After 10 years of experience using The Manufacturing Game® at many other companies and sites, we see now that there are six ways the framework introduced in figure 1 can apply. The placements of the idea, worker, and authority have six different alternatives. These correspond to what John Bennett called strategies.

The strategy depicted in figure 1 is a concentration or strength strategy that is appropriate when you are trying to increase the use of the resources within your organization. The one that is more appropriate to the DuPont experience is the planned strategy. We were attempting to create the planned domain directly. Therefore, we started with the idea of planned work and the unfreezing was created in the engagement of management first, as compared to engagement of the worker first at Lima. The initial benchmark study in the United States was used to change management's perception of the organizations performance. At DuPont we were a very internally focused organization and we were surprised at our poor performance in maintenance cost as compared to the benchmarked "best of the best" companies in the

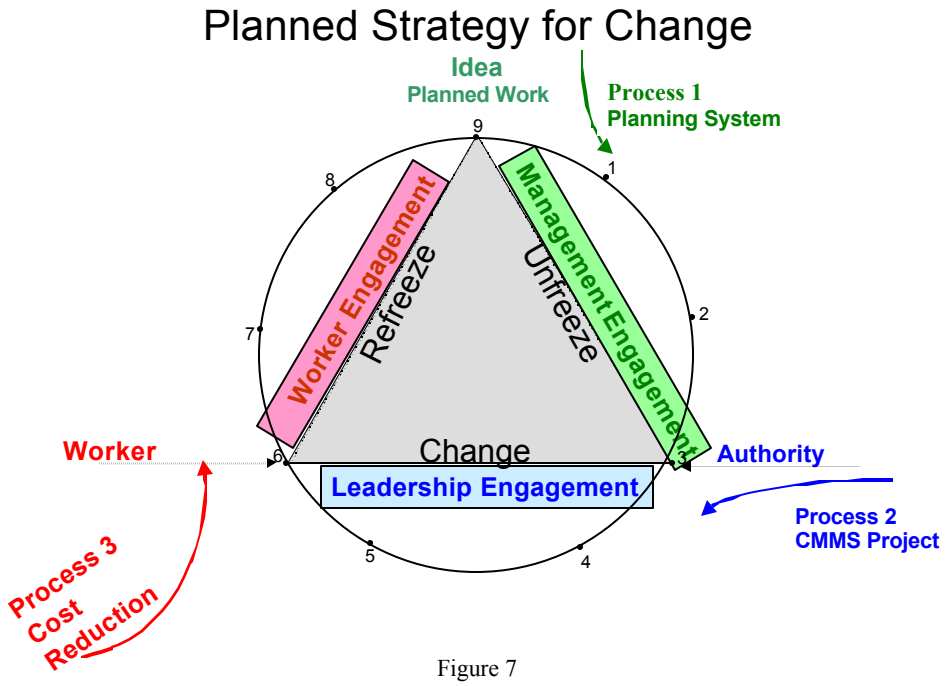

Figure 7

United States. The leadership engagement in this case was in the form of a project to create, install, and use a Computerized Maintenance Management System (CMMS). There was an organization set up specifically for this purpose

on a regional basis and a large number of people were involved in the implementation of this system.

In this strategy, the unfreezing is not a worker engagement but a management engagement. The management was engaged using this benchmark data to convince them that they needed to improve cost by implementing a system for planned maintenance. Creating a project team to develop and implement a Computerized Maintenance Management System (CMMS) was the leadership process.

The third process at DuPont was cost cutting as compared to site survival at Lima. This crisis created in DuPont by the announcement of a one billion dollar cost cut was not as strong as the survival crisis at Lima. Therefore, we were not able to attain the improved precision domain as Lima did. We were only able to get to the planned domain. Despite the generated annual, sustainable cost savings of $350 million/year in maintenance cost, the cost-cutting did not get us to the domain which would have made us much more competitive. This third process seems to determine the magnitude of the change that is attainable. When people's identity was challenged at Lima, they were able to make a much larger change than we could at DuPont with a cost cutting driver. Therefore, I think the nature of this third process that creates the crisis in your change effort determines which domain you can pursue.

Key Factors in Organizational Change

So – how to succeed? In the concentration strategy, an organization needs to create some process to engage the workers to initiate changes in their behavior and work processes that will create performance equivalent to the best companies in the benchmark. This usually takes the form of a program to adopt the best practices of other companies. One of the difficulties here is that the benchmarking process only gives a snapshot in time of the best practices, and does not give information on how the companies implemented these best practices. There is a learning process over time that is not captured by benchmarking processes.

Another difficulty is a traditional apples-to-oranges comparison. Let's say Company A is the company that developed a best practice. Because that company's history and situation was unique at the time the practice was developed, Company B may not benefit as its situation and history is not a mirror image. An example of this occurred in DuPont as we started our journey to planned maintenance in 1987.

It was a unique time in DuPont's history because we had the people, the financial pressure, and the knowledge to accomplish planned maintenance. In my 27 years at DuPont, we had tried at least 3 times to achieve planned maintenance and failed. The fact that we were not doing any plant expansions in

the United States during the last attempt created an excess of very qualified people to work on maintenance at the same time that benchmark data and the major stockholders were telling us we had to improve our financial performance. Three years later, we discovered that there was an even better way to do maintenance than planned (the improved precision domain of figure 6), but the earnings of the company had recovered so much that we could not convince anyone to pursue the better way. The organization had become frozen in the planned maintenance domain and must be unfrozen again to continue the progress.

The Final Threshold: Enduring Change

Creating order is the most difficult stage of the journey to achieve. We have found that many change efforts fail to be sustained for the long term.

In order to complete a process of change, it is necessary to be attached to a larger trend that is already happening, or about to happen, in your organization or the world at large. A change will not be self-sustaining if the leadership process has to continue to support it to survive. Remember that the leadership process is to support change, not to keep order. The new way needs to be part of the new natural order of things. Therefore, it is necessary to tailor the change to fit into the larger change that is happening.

At this point, another barrier must be crossed with the help of this larger change. One of the difficult parts of this transition is that an organization must abandon some of the processes and practices that have been very successful to this point. Those practices were about change and now it is time to create order again.

In DuPont's case the whole process was institutionalized by changing the purchasing system so that the materials and labor necessary to do the maintenance work had to be purchased through the new CMMS system and it was easier to purchase the materials if the work was planned and scheduled. Therefore the easiest way to do your work was planned and scheduled. Once the employees had the habit of using the CMMS on a daily basis, this made planned maintenance the new natural order of things. To expedite this process, all hourly employees were required to fill out their time cards using this CMMS system. This ensured all employees were familiar with the system on a routine basis, as the supervisors and managers had to use the system to authorize time cards, material purchases and work plans.

In the Lima case, defect elimination was stressed through the cross-functional action teams during the change stage. We are not certain yet if the change at Lima will be stable over the long term. Because of the changes in some of the personnel involved after the sale to Clark (Premcor), some of the activities have stopped. This is not necessarily a problem if the defect elimination habits are strong enough to sustain the performance. Lima employees still work on defect elimination and use action teams informally. The

leadership forums have recently been revived as a Vision Forum. However, we would like to have a system in place to reinforce the right behaviors like the CMMS system at DuPont. It is not clear yet what that system should be. We think some form of self-management may be the answer.

At BP, we are pursuing the types of changes that were made at Lima on a much larger scale in the upstream oil and gas production part of the organization. We are currently in stage 2 for a number of assets and are evaluating how to complete stage 2 and transform to stage 3.

In conclusion, we would recommend the concentration strategy of figure 1 that we experienced at BP-Lima, over the planned strategy of figure 7 that we experienced at DuPont. The benefits are much larger with the concentration strategy. Of course, the strategy you pursue must match your particular business situation. The third process is controlled by the business situation and limits what can be achieved. Also there are four other variations of this model that we have not tried yet so there may be even better strategies for other business situations.

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Common Questions Regarding Organizational Change

And our proposed answers.

A. Large Scale Change

1. Has anyone made a large-scale organizational change without a crisis?
A: Some people cite GE as an example, but Jack Welch says that he created a crisis at GE. We have not personally seen a large organizational change that was not preceded by a crisis – either real or manufactured. The role of a crisis is to supply the third process that makes the change sustainable.

2. Should you do a bottom up or a top down approach?
A: You should start with a bottom up approach on defect elimination, start a top down leadership process and start an outside the organization to inside the organization process by bringing in best practices from other companies.

3. How do you motivate people to change?
A: In general people have to be self-motivated, and therefore you have to create an environment where people are self-motivated. To do this you must understand the structure of the situation and this is where we have found System Dynamics to be a good tool to discover that structure.

4. Can you go directly to the final change or must you proceed in stages?
A: *Our experience would say that the* Kurt Lewin *stages have to be in that sequence (unfreeze, change, refreeze), however, you may be able to accelerate the progress through those stages.*

5. How do you get the troops to embrace the new organization?
A: *We believe in what Eli Goldratt said, "Have them invent it."*

6. How can we get away from the "program of the month approach?"
A: This is where we found the integrating factor of the Hero's Journey to also be very helpful. All of the initiatives in an organization should be integrated together for implementation.

B. Measurement of Change

7. What metrics are essential to drive change?
A: We agree with W. Edwards Deming that you should not measure anything that you don't intend to improve.

8. Is it true that what you measure is what you improve?
A: Typically we have not found that to be the case. Organizations have spent a lot of money on systems to measure things that they never improve.

C. Best Practices

9. How can we adopt and practice the best practices of other companies?
A: What we have found is that first you have to eliminate a lot of defects from your system that then frees up people's time to implement best practices used by other companies. This again is something that was preached strongly by Deming.

10. Is benchmark data from other organizations helpful in a change effort?
A: Benchmark data helps people understand that change is possible and necessary. The problem with benchmark data is that it does not tell you how people got there. This is where we found the Hero Journey to be helpful in discovering how you can get there.

D. Self-Management

11. How do organizations get first line supervisors to give up control?
A: It is important that first line supervisors provide stability in the organization. Therefore first line supervisors are usually the last ones to change. This is a good thing.

12. Does self-management depend on natural leaders taking over in place of the supervisors?
A: No. Self-management requires that everyone be a leader.

E. Decision Making

13.Can you really expect workers to make good decisions?
A: Absolutely they can, as long as the boundaries are clearly articulated.

14.Can groups make good decisions or is it an individual thing?
A: In large organizations decisions are always group decisions, because no single person can execute the actions required to implement a decision and unimplemented decisions are not decisions.