
Cracking the code of business

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Keywords

Ethics, Investor relations, Leadership, Lean production, Organizational behaviour, Productivity

Abstract

Large public companies restructure themselves on a regular basis with the primary goals of achieving better financial performance and demonstrating responsiveness to shareholder interests. However, it is well-known that such discontinuities typically result in great stress and confusion amongst employees, particularly over how to achieve new stretch goals. Key functions such as engineering, manufacturing, purchasing, quality, and finance often pursue separate paths to achieve function-specific goals. This paper utilizes the principles and tools of lean production to decode the CEO's mandates and deliver practical, solutions-oriented tools to employees to help achieve stretch business goals. This creates an effective bridge between the language of the CEO and engineering, manufacturing, purchasing, quality, and finance functions. Coupled with LEAN BEHAVIORSSM, an environment can be created that enables widespread employee alignment and commitment to challenging business conditions. The result is the first framework that unifies technical and behavioral components of management.

Introduction

Amorphous Conglomerate Company is being hammered by the marketplace. Revenues are off by 13 percent, cash flow is nearly half of net income, and pre-tax income is down 37 percent. Market share is down 4 points. Once high profit products are now becoming commodities. Prices are falling and competition is intensifying due to recent mergers. There is excess capacity in the industry. Costs are rising. High quality imported products are beginning to enter the market. Investment analysts cry "sell". The stock price drops 31 percent. The complacent board has been activated. It is time for a new chief executive officer. New leadership and bold new initiatives are needed!

The new CEO arrives and the first order of business is a series of senior executive meetings to develop new strategies. They scrutinize past financial performance, market share, profit projections, manager and employee skills gaps, quality performance, new products under development, marketing strategies, and the incentive compensation structure. The CEO is watching each executive closely for clues to determine who will likely be cast aside and who will thrive in the upcoming restructuring. A list of mandates is formulated and employee meetings are scheduled to communicate the new strategic plan.

The auditorium is filled to capacity. Employees wait quietly for the CEO to arrive. The CEO presents the strategy and employees listen intently to the new plan. The central features of the strategy are to grow sales, reduce costs, streamline operations, and speed up decision making to make the organization more efficient. The company will reorganize from strategic

business units to global product centers to better serve customers. Two factories will be closed this year, the workforce will be reduced by 18 percent, and one large acquisition will be made to establish a presence in services. The mandates include:

- 1 double net income;
- 2 increase cash flow by 100 percent;
- 3 increase working capital turnover by 30 percent per year;
- 4 double inventory turns;
- 5 introduce ten new products over two years;
- 6 develop new products in half the time with half the money;
- 7 reduce costs by 30 percent;
- 8 improve product quality by 50 percent.

The CEO assures employees that they are intelligent people and will find ways to achieve these goals. Working in teams, they will generate remarkable solutions. The company has a great history and will make it through this dark period by coming together as a family. There are no barriers, the CEO declares. It will be a tough fight for survival, problems must be attacked with urgency, the enemy has been identified, and our objectives are clear. The war has begun – take no prisoners. Courageous leadership will make the difference.

The CEO tells employees to just put their heads down and grind it out. Working harder and working smarter will improve competitiveness and speed to market. We will meet our commitments, guaranteed, and failure is not an option. The CEO says that the company and its shareholders must win; anything less is unacceptable. A new era of personal accountability for performance has been declared. Make commitments and meet them; no excuses. What gets measured gets managed. A balanced scorecard is introduced as a means of focusing employees' efforts (Figure 1). Investment analysts cheer the aggressive cost cutting and revenue growth plans. The stock price jumps 8 percent.

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Figure 1
 Example of a typical balanced scorecard whose focus is mostly internal

<p>Finance</p> <ul style="list-style-type: none"> • Return on Sales • Return on Net Assets • Inventory Turns 	<p>Customer</p> <ul style="list-style-type: none"> • Returns • Overdue • Complaints • Market Share
<p>Innovation</p> <ul style="list-style-type: none"> • New Products • New Markets 	<p>Internal</p> <ul style="list-style-type: none"> • Order-to-Ship • Mfg. Productivity • Quality • Response Time

Amorphous Conglomerate Co. is clearly back on track.

After the meeting, most employees are thinking the same things. Yet another restructuring – the third one in 11 years. More layoffs, morale is deteriorating, loyalty is gone. Why didn't the last two restructurings work? Will I be one of the 18 percent to go? How are we going to achieve such aggressive goals? Where do we start? What must I do differently? Cynicism creeps in, and employees grow further apart from management.

And so the corporate transformation begins. Each executive develops plans and delivers them to lower-level managers and employees for implementation. Employees, lacking specific, actionable behaviors proceed to work in an uncoordinated fashion. Each department seeks to optimize its own area with the hope of meeting stretch targets. Everyone knows that people who do not meet their commitments will likely be dismissed. It is a time for results, not just good effort. The stakes are high, so implied threats weigh heavily upon employees' minds. People are highly motivated, right?

Will the company survive? Probably, in some form or another. Is this the best way to manage a turnaround? No, because the new executive teams' analysis and CEO's resulting call to action concentrates primarily on financial parameters that are understandable to only a select group of people. The new strategy is confusing, so it will need to be forced on to the organization. The CEO will be at risk if the organization is unable to execute the new strategic plan in accord with investors' expectations (Charan and Colvin, 1999).

What is lacking is critical thinking, an intellectually disciplined process whereby ideas, assumptions, reasoning, implications, and espoused knowledge are closely examined to ensure that they are logical and consistent. Critical thinking can yield a common language and set of activities that align key functional areas and stakeholders together in times of change. This paper describes a way to accomplish this by integrating lean production and lean behaviors.

The importance of critical thinking – part 1

Eiji Toyoda visited the Ford Motor Company in 1950 to benchmark their production system. What he saw was the world's leading mass production system – a best practice of its day with its great history, growth, and sales figures to prove it. Mr Toyoda could have returned to Japan and implemented such a system in his own factory. But he did not. Why? Probably because he could not afford to replicate the infrastructure due to a lack of human, financial, material and physical resources. And he may not have been aligned with the values and methods of batch-and-queue mass production, or thought that significantly higher quality must be achieved, and the only way to do this was through relentless process improvement. So, through a constructive combination of factors – constraints, dissatisfaction with leading production methods, vision, and critical thought processes – he and his colleagues created a new way to produce automobiles (Womack *et al.*, 1990).

Lean production was developed beginning in the 1950s by Eiji Toyoda and Taiichi Ohno of the Toyota Motor Co., and Shigeo Shingo, a consultant to Toyota and other Japanese manufacturers (Ohno, 1988). They systematically developed a disciplined process-focused production system whose objective was to minimize the consumption of resources that add no value to a product. They determined that there were seven major wastes in production: defects, transportation, overproduction, waiting, processing, movement, and inventory. A key concept in lean production is to understand value as seen by the end-use customer. From this viewpoint, activities and actions that do not add value can be identified and eliminated. The result is a business system that is capable of achieving remarkable performance across the extended enterprise. The five fundamental concepts are (Womack and Jones, 1996):

- 1 Specify value – see value as defined by the end-use customer.
- 2 Identify the value stream – understand all the activities required to produce a product, then optimize the whole process from the view of the end-use customer.
- 3 Flow – getting the activities that add value to flow without interruption.
- 4 Pull – respond to the demand of the customer.
- 5 Perfection – systematically identify and eliminate waste in production.

Lean production employs the process of continuous improvement to products, processes, or services, with the goal of reducing waste and improving performance over time. The fundamental tool is Kaizen, in which cross-functional teams systematically analyze processes to identify and eliminate waste. Kaizen events, typically one to five days in duration, can yield 50-90 percent reductions in waste compared to the 1-5 percent level of improvement sporadically obtained in unstructured mass production process improvement efforts. The application of Kaizen is supported by numerous process analysis and improvement tools.

The primary support tools include: 5S, visual factory, total productive maintenance, set-up reduction, mistake-proofing, standard work, one-piece flow, and kanban (Robinson, 1991). The 5Ss stand for: sort, straighten, shine, standardize, and sustain. In other words, a clean and organized workplace eliminates the waste of time and effort spent walking around trying to find things. Visual factory is a method of organization such that the work, current conditions, schedule, and abnormalities are made obvious to even the casual observer. Extensive use is made of visual and audio controls to make normal or abnormal conditions readily apparent. Total productive maintenance is a methodology that permanently improves the effectiveness of equipment such that unscheduled downtime is eliminated. Set-up reduction is a process whereby machine set-up time is reduced from hours to minutes, thus making it affordable to produce small quantities of goods. Mistake-proofing is the creation of simple, inexpensive devices that allow work to be performed defect-free at all times.

Standard work is the precise description of a work process upon which future improvements can be made. One-piece flow is a technique used to manufacture components in a cellular environment, such that no part is allowed to go to the next operation until the previous operation has been successfully completed. The goals of one-piece flow are to make one part at a time, correctly all the

time, and to achieve this without unplanned interruptions or lengthy queue times. Conversely, in batch-and-queue production no part can move to the next operation until the entire batch is processed which results in lengthy queue times and larger numbers of defects. Kanban is a method for replenishing materials on a just-in-time basis, thereby eliminating the waste of overproduction.

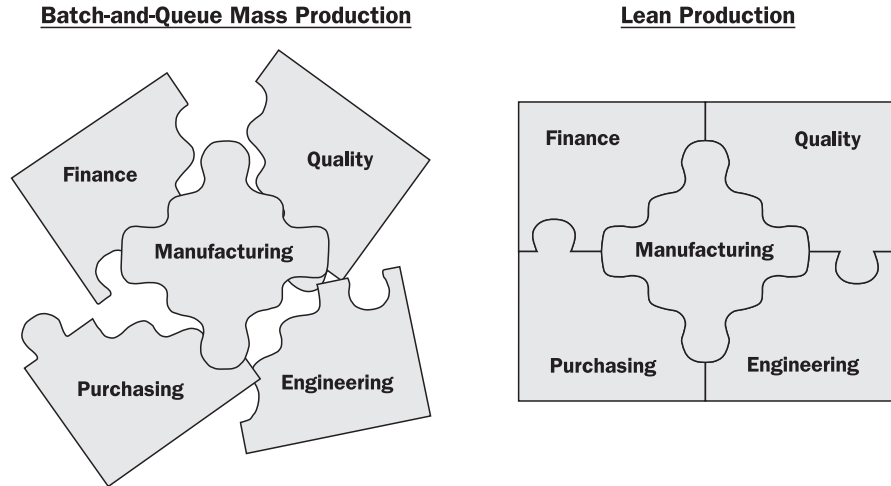
Lean production cannot succeed without the disciplined use of effective tools to determine the root cause of variation or abnormal conditions. For example, one-piece flow simply cannot be achieved with recurring interruptions or quality turnbacks. So extensive use is made of Pareto charts, scatter diagrams, fishbone diagrams, and similar tools to determine the root cause of variation and implement corrective actions that ensure the elimination of repeat occurrences. Another simple and effective tool is the “5 Whys”, which involves asking “why?” five or more times until the root cause is identified.

Lean production has many remarkable features, eight of which are particularly worth noting. First, the business philosophy is simple and can be easily understood by any employee. Second, it engages all employees, regardless of function or position, in a blame-free environment focused on improving processes and eliminating waste using well-defined tools. Third, employees need only to understand arithmetic to utilize the process improvement tools. Fourth, lean production integrates product design, manufacturing, and distribution so that the whole is optimized for the benefit of the end-use customer. In contrast, the batch-and-queue mass production philosophy optimizes the individual parts for the benefit of competing departments (Figure 2). Fifth, the lean production system, while counter-intuitive compared to traditional batch-and-queue mass production, yields sustainable competitive advantage if implemented properly. Sixth, improvement does not have an end point, unlike in batch-and-queue mass production where learning curves imply the existence of improvement limits. Seventh, lean production is inexpensive to implement and maintain. Eighth, lean production is the lowest cost, highest quality, and most responsive production system.

The importance of critical thinking – part 2

Leading people remains one of the most challenging aspects of modern business. Hundreds of useful models and tools have

Figure 2 Batch-and-queue mass production strongly promotes optimization of individual functions while lean production seeks to link these functions together, including external stakeholders



been developed since Frederick Taylor's *Principles of Scientific Management* was first published in 1911 (Taylor, 1967). The models and tools of Argyris, Bennis, Covey, Deming, Drucker, Follett, the Gilbreths, Goleman, Handy, Kets de Vries, Maslow, Myers-Briggs, Pfeffer, Schein, Senge, Tichy, Vroom, and others demonstrate both the importance and the challenge of effective management in complex organizations. The philosophical and analytical contributions made by these people are great and unquestionable. All are substantially correct in their observations and prescriptions. However, the persistent dissatisfaction of employees demonstrates that most managers apparently remain unconvinced of the merits of generative behaviors upon organizational effectiveness. How can this be?

There is no doubt that the daily pressure of business brought by stakeholders, particularly investors and customers, leads to a persistent focus upon their issues. Because investor and customer concerns shift often, and perhaps without much warning, the work of operating managers will tend to focus on results at the expense of process. The feedback from these stakeholders is rapid and very effective in quickly changing management's behavior. In addition, management may believe that having a process focus conflicts with the flexibility required to respond to the shifting needs of investors or customers. Results tend to be highly valued in organizations that lack well-defined processes.

The importance of stock price and stock-based compensation cannot be overstated since it profoundly influences management's behavior. Thus, not all stakeholders are

equal. In fact, management can treat some of its stakeholders quite poorly, like employees, suppliers, or labor unions, and still make a lot of money. Why? Making a list of the things that senior management typically does to increase stock price leads to a curious result (Table I). Of the 26 items listed, none relates to the management of employees. The items listed can keep management busy for decades without them ever having to worry about

Table I
 Traditional CEO playlist

- Layoffs
- New management
- Close facilities
- Share re-purchase
- Acquire
- Merge
- Divest/spin off assets
- Incentive compensation
- Develop new markets
- Develop new products
- Exclusivity
- Discontinue non-performing products
- Reduce debt
- Accounting methods
- Reduce taxes
- Consolidate
- New technology
- New business model
- Outsource
- Reduce purchased material expense
- Process improvements
- Legal/patent position
- Challenge/threaten rivals
- Price cuts
- Reduce discretionary expenses (perks)
- Tariffs

generative management practices. Further, employee concerns are often seen as problems that have no practical or quick solutions. So why spend much time worrying about them? We thus come to the realization that the management of employees is essentially an *independent variable* in business. This is a key factor in explaining why many good management models fail to produce permanent and widespread changes in behavior.

Non-executive employees are a unique type of stakeholder because they generally have limited access to executives and less influence, either as individuals or groups. Companies with perpetually unresolved conflicts, such as confusion over the meaning and applicability of terms like empowerment, help ensure the status quo. Thus, an employee's desire to contribute new ideas based upon expert knowledge can conflict with senior management's view of employees as either non-experts or narrowly-focused people whose primary function is to faithfully execute top-down business plans.

In addition, management models are seen as theoretical constructs that are not generally applicable to actual business conditions (Mills *et al.*, 1998; Sturges and Brewerton, 1999). What we learn about management in business school is "nice to know", but we quickly learn from experience that there may be little or no reward for actually practicing such behaviors. Rather than evolving to higher practices, we devolve in response to fundamental business realities such as meeting cost, delivery, quality, or product performance goals, not to mention quarterly earnings. How can it be that actual management practices are so disconnected from the needs of employees?

One reason is that management models can be complex, hard to understand or remember, or difficult to make actionable, which makes them unlikely to be used under real business conditions. The models address a variety of personal and interpersonal competencies that may not appear to be applicable to all stakeholders, thus undermining consistent application. An effective management model must be congruent with real world conditions in order to have a chance of actually being applied. Further, the solution must be a simple process that is easy to understand and one that complements, rather than conflicts with, the pressures imposed by investors and customers. What would such a solution look like?

Knowledge of the history of management coupled with the current practice of management in many large manufacturing

businesses demonstrates that existing solutions have yet to meet the needs of practitioners. We can think of this as an engineering problem in which there exists variation whose root cause must be understood. Critical analysis of this variation first leads one to think about the differences in production systems used by companies that manufacture goods. The distinctive feature of batch-and-queue mass production is that it maximizes the consumption of resources, while lean production seeks to minimize waste. This, in turn, leads to careful thought about the behaviors that are used in day-to-day human interactions and the realization that they may not be congruent. In fact, direct observation of human interactions within and between batch-and-queue mass production businesses reveals an abundance of wasteful behaviors (Table II). In other words, using wasteful "hard" (technical) skills supports the daily use of wasteful "soft" (interpersonal) skills. If this is true, then can lean "hard" skills support the daily use of lean "soft" skills?

Lean behavior (see Appendix) is the application of lean production principles and tools to the management of personal and organizational behaviors with the goal of eliminating behavioral waste (Emiliani, 1998a). Stated another way, lean behavior is a method of improving "soft" skills using the same "hard" skills practiced by lean producers in the manufacture of goods. The opposite of lean behavior is called "fat behavior", and is defined as any activity or action that creates or perpetuates behavioral waste. Table III shows a comparison of these behavioral attributes, while Table IV presents the consequences of fat behavior. What is significant about lean behavior is that its structure maps directly on to lean production, thus creating a parallel, rather than orthogonal, business management model (Figure 3). This is a breakthrough in organization design because all activities in a manufacturing business can now be aligned.

As in lean production, a key element in lean behaviors is to understand value as seen by the end-use customer. From this viewpoint, behavioral activities and actions that do not add value can be identified and eliminated. The five fundamental concepts are:

- 1 Specify value – understand the wants and expectations of the people that we interact with.
- 2 Identify the value stream – understanding what people do and why they do it.

- 3 Flow – behave in a manner that minimizes or eliminates delays or stoppages in the work performed by others.
- 4 Pull – recognize that people operate under many different mental models which require us to adjust our styles or approach often.
- 5 Perfection – systematically identify and eliminate behavioral waste.

Lean behaviors employ the process of continuous improvement to one self or an organization with the goal of reducing behavioral waste and improving performance over time. The fundamental tool is also Kaizen, where behaviors are systematically analyzed in order to identify and eliminate waste and yield a life-long learning mindset. The application of Kaizen in the behavioral context is supported by the same process analysis and improvement tools as used in lean production, including:

Table II

General characteristics of production systems

Batch-and-queue mass production	Lean production
Functional focus	Business focus
Management directs	Management teaches
Delegate	Support
Fear of failure	Share successes
Blame people	Improvement opportunities
Heroes and goats	Real teamwork
Us versus them	Community
Results focused	Process focused
Me (producer)	You (customer)
Status quo	Change to improve
Forecast	Make to demand
Presentations	Key metrics
Dedicated equipment	Flexible equipment
Slow changeover	Quick changeover
Narrow skills	Multi-skilled workers
Managers control	Workers control
Supplier is enemy	Supplier is friend
Guard information	Share information
Customer as buyer	Customer as resource
Linear design	Concurrent design
Volume lowers cost	Analyze cost drivers
Local optimization	Value stream optimization
Complex inventory management	Simple inventory management
Direct cost reporting	Indirect cost reporting
Internal focus	External focus
Shallow process knowledge	Deep process knowledge
Quality problems	Quality commitment
Hierarchy	Flat organization
Short-term thinking	Long-term thinking
Individual accountability	Team accountability
Rewards: money	Rewards: money, pride, etc.
Competition	Cooperation
Complex	Simpler
Intuitive	Counter-intuitive
Maximize consumption of resources	Eliminate waste

Table III

Comparison of behavior attributes*

Fat behaviors	Lean behaviors
Confusion	Self-awareness
Unnecessary commentary	Humility
Irrelevant observations	Compassion
Random thoughts	Suspension
Self-imposed barriers	Deference
Ego	Calmness
Irrationality	Quietude
Revenge	Reflection
Inaction	Honesty
Positions	Benevolence
Interpretations	Consistency
Uncertainty	Generosity
Negativity	Patience
Excess	Humor
Gossip	Understanding
Sarcasm	Respect
Preoccupation	Listening
Ambiguity	Observation
Extreme flattery	Trust
Cynicism	Sincerity
Subjectivity	Equanimity
Bias/prejudice	Objectivity
Deception	Discipline
Selfishness	Rectitude
Pride	Wisdom
Criticism	Balance

Note: *Not intended to represent one-to-one correspondences

5S, visual/audio control, total productive maintenance, set-up reduction, mistake-proofing, standard work, one-piece flow, and kanban (Emiliani, 1998b).

The 5Ss stand for: sort, simplify, sustain, self-discipline, and spirit. In other words, a workplace, work habit, and mind that are organized and energized eliminate the waste caused by inconsistent behavior. Visual and audio controls are the visible and audible expressions used by people that indicate their emotional state and willingness to engage in human interactions. Managers should be mindful of their facial expressions and tone of voice if they expect to promote successful encounters with other people. Total productive maintenance is the maintenance of the mind and body, since our personal effectiveness is affected by how we think and feel.

Set-up reduction is a process whereby the time needed to achieve change in business practices, and concomitant employee buy-in, is reduced from years to months. Mistake-proofing is the creation of simple devices that allow humans to interact with fewer conflicts. Standard work is a method for reducing wide variations in management's

Table IV

Consequences of fat behaviors

Threats, real or implied
Micromanagement
Disappointing employee surveys
Few improvement suggestions
Employees stuck in functional area
Scarcity mentality/limited resources
Low turnout at meetings
Calls not returned
Annoyed stakeholders
Slow response to changing conditions
Employee turnover
Rumors
Transactional focus
Crisis management
Failure not tolerated
Unclear expectations
Little or no feedback
Appearance over substance
Favoritism
Many procedures
Low trust
Talk not walked
Management secrets
Few rewards
Ego-driven decisions
Department or functional focus
Unmet stakeholder needs
Relentless pace
Poor listening skills
Broken promises
Elitism
Delays in action
Confusion
Destructive politics
Declining market share
Fear
Ignorance
Blind obedience
Reduced loyalty
Mistakes repeated
Conflict

interpretation of business conditions with the goal of achieving greater alignment and consistency. One-piece flow means performing each activity as it is presented and being responsive to all stakeholders. It is the development of a “do it now” mindset, as opposed to letting business matters sit in a queue waiting for disposition or purposely creating waste in non-production activities. Kanban means that managers are responsive to employees; that they provide them with what they need, when they need it, to help eliminate waste caused by delays or inaction.

The same root cause problem-solving tools used in lean production can also be used in lean behaviors: Pareto charts, scatter diagrams, fishbone diagrams, 5 Whys, etc.

These tools help classify and determine the cause of variation in personal or organizational behavior for which corrective actions can then be applied. The most important application of these tools may be in the determination of the root cause of failed management initiatives, coupled with codification of lessons learned into databases and applying the principles of Kaizen to past initiatives.

This new framework rigorously aligns the production work performed in lean factories to the development of leadership and management skills. Lean behaviors are simpler and more practical compared to other solutions, and thus should enable faster results with greater chance for long-term sustainability. The key concept is the elimination of waste, be it in production or human behaviors.

The language of business

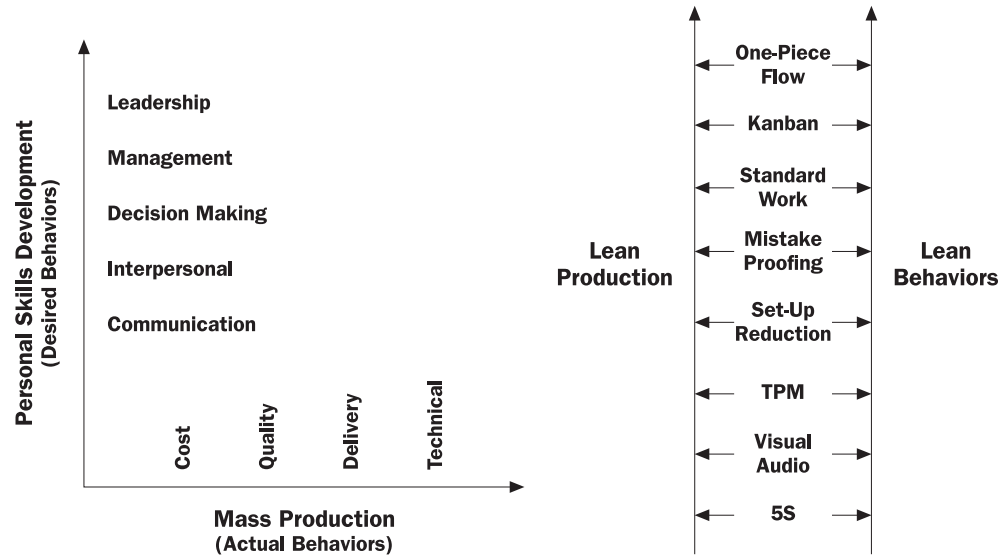
The language we use depends upon what part of the business we participate in. The language of senior management is dominated by terms related to money. For most public companies, the focus is on shareholders, not stakeholders, though some companies are now becoming more aware of stakeholder interests and realize that satisfying these interests need not come at the expense of shareholder value. Stakeholders can include employees, suppliers, customers, labor unions, federal governments, towns, environmental groups, and local educational institutions, and even competitors, to name a few.

Senior management speaks in terms of return on revenues, net income, cash flow, earnings per share, working capital, net operating assets, return on equity, return on capital, price/earnings ratio, inventory turns, return on net assets, etc. We can assume that the finance people know what the CEO means, but the typical non-financial employee does not understand these terms very well because they speak and think in different languages. This demonstrates the power of functional languages in shaping perceived roles and responsibilities in business settings.

Engineering people speak of tolerances, tensile strength, high-cycle fatigue, heat transfer rate, compressible flow, power, contact resistance, natural frequencies, and other terms. Manufacturing speaks of standard hours, machine capability, cycle time, batches, overtime, queue time, set-up, labor grievances, etc. Purchasing people

Figure 3

Batch-and-queue mass production practices and leadership skills development generally oppose each other (left), while the lean business model (right) aligns both production and behavioral practices



speak of price, purchase price variance, on-time delivery, purchase orders, supplements, fill rate, expediting, terms and conditions, commodities, etc. Quality people speak of non-conformances, statistical process control, process capability index, qualified suppliers, defects-per-million, root cause, corrective action, audits, etc. Accounting and finance people speak of budgets, labor hours, fixed costs, variable costs, controllable costs, uncontrollable costs, manufacturing overhead, SG&A, cost of capital, etc. Different functions focus employees into different worlds.

The various languages used by these key functional areas help ensure that responsibilities remain neatly divided, even in companies that practice teamwork. The CEO often reinforces such distinctions simply by the manner in which work is delegated. For example, customer complaints related to product performance are handed to the Vice President of Engineering for action. Customer complaints related to delivery performance are handed to the Vice President of Manufacturing. Customer complaints related to product cost are handed to the Vice President of Purchasing, and customer complaints related to product quality are handed to the Vice President of Quality. The common view, rooted in the mass production mindset (Table II), is that these customer complaints are not related to each other.

Management often cannot effectively explain to employees the importance of financial indicators in investor valuation,

corporate financial performance, or value stream management. Further, these measures are not effectively translated into operating practices and behaviors that employees in diverse functional areas can effectively respond to because responsibilities are divided. Thus, not critically thinking about how these different functions interact together can lead to conflict, and explains why the performance of most teams fall well below the expectations of senior management.

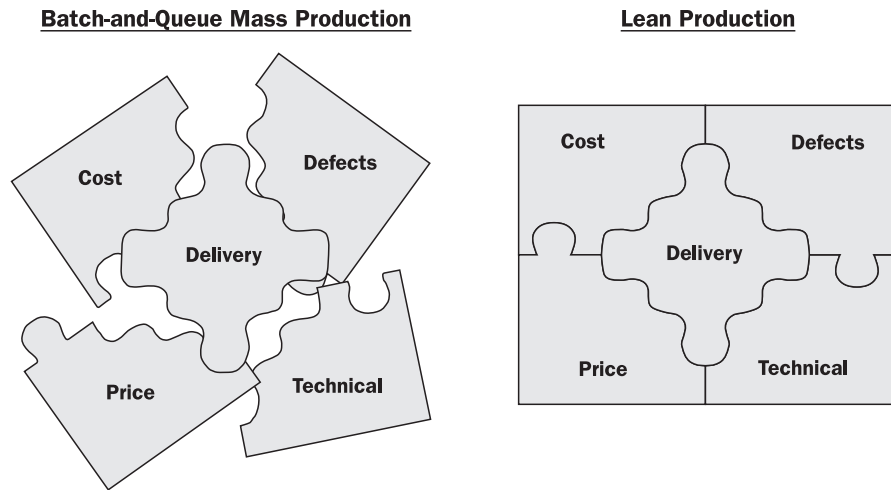
In addition, incentive compensation systems for senior managers often lead to a “coin operated” behavior designed to ensure focused response to temporal business demands or the concerns of selected stakeholders, which creates schisms between key functions, operating performance, and stakeholder satisfaction. For example, it is easy to find examples of metrics in one functional area that conflict with the metrics of another functional area or stakeholder (Figure 4). Rarely are such wasteful inconsistencies eliminated because most companies do not work effectively across functional or other types of boundaries.

Making mandates actionable

Recall that the new CEO of Amorphous Conglomerate Co. made the following mandates:

- 1 double net income;
- 2 increase cash flow by 100 percent;

Figure 4 Batch-and-queue mass production strongly promotes optimization of individual metrics while lean production seeks to link the metrics together from the customer’s perspective. The critical differences are results versus process focus and maximizing the consumption of resources versus eliminating waste



- 3 increase working capital turnover by 30 percent per year;
- 4 double inventory turns;
- 5 introduce ten new products over two years;
- 6 develop new products in half the time with half the money;
- 7 reduce costs by 30 percent;
- 8 improve product quality by 50 percent.

What might the people from the various functional groups think when they hear these mandates as they are uttered by the new CEO? Which of these mandates will they accept responsibility for, and which ones will they assume to be the responsibility of their colleagues in other departments? The outcome could be as follows:

- Engineering – Items 5, 6 – possibly Items 7 and 8.
- Manufacturing – Item 4, 6, 7 – possibly Items 5 and 8.
- Purchasing – Items 4, 7 – possibly Items 6 and 8.
- Quality – Item 8 – possibly Item 7.
- Finance – Items 1, 2, 3, 4, 7 – possibly Item 6.

Each functional area typically selects only those items that resonate with what they perceive to be within the domain of their current roles and responsibilities; i.e. that which is consistent with their function, metrics, or core educational experience (Table V), as is typically done in batch-and-queue mass production businesses.

In this example, all five functional areas believe that it is their responsibility, at least in part, to reduce costs by 30 percent. On the surface, this would appear to be quite good, and senior management might even rejoice

in the alignment that appears to exist for this particular goal among employees. However, this may not be as good as it seems, especially if the methods used by each functional area to achieve these goals are substantially different – as would likely be the case in large or decentralized companies. Managers lacking common or standard approaches will likely invoke traditional methods, perhaps slightly improved, that are known to be capable of delivering quick results and thus avoid personal risk. And the sense of urgency delivered by the new CEO will reinforce management’s view that traditional methods performed faster will be sufficient to get the job done. This can also result in conflicting metrics that create waste through confusion and delays.

Following the CEO’s call to action is local planning and execution. Given the crisis that Amorphous Conglomerate Co. faces, there is likely to be more implementation than planning. Figure 5 schematically depicts the two categories that most companies fall into regarding planning and execution. Most companies start with minimum planning and then proceed directly into widespread execution. The planning component rarely becomes dominant because employees are not rewarded for planning, only for results.

In contrast, fewer but usually better managed companies engage in a large amount of planning at the onset of new initiatives. They think critically about the types of leaders needed, roles, responsibilities, how people are affected by new processes, resources, key milestones, desired outcomes, and stakeholder

participation, to name a few. The result is a more focused, better thought-out plan that has a greater chance for technical and human success.

The next item to examine is the specific actions that people in these different functional areas will do to achieve the stretch goals that they think they are responsible for. Having a functional mindset will focus people into doing the types of things that are normally done in distressing times, but perhaps with some modification to ensure currency with prevailing business practices. Table VI shows the activities undertaken by the employees of Amorphous Conglomerate Co. in response to the new

CEO's mandates. Note that this example is intended to illustrate the types of things that batch-and-queue manufacturers typically do as a first response to business challenges. It is not intended to represent all activities that could potentially be undertaken.

Table VI shows that each function performs activities that are unique to their perceived area of responsibility resulting in different responses. In addition, some activities clearly conflict with each other including:

- Engineering's focus on product performance, leaving manufacturing and purchasing to manage product cost.
- Engineering asking purchasing to increase purchase volumes and purchasing's goal of minimizing inventory.
- Manufacturing's desire to outsource while purchasing seeks to reduce the supply base.
- Increase outsourcing while finance recommends workforce reductions in purchasing.
- Quality seeks to eliminate suppliers with poor quality while purchasing seeks the lowest price suppliers.

Other activities will lead to mediocre results, such as generating new forecasts because they will likely be wrong and lead to either excess of unwanted materials or shortage of needed materials. Forcing suppliers to reduce price, imposing financial penalties for non-conformances, and extending payment periods will damage relationships with these key stakeholders. Haphazardly troubleshooting manufacturing processes to reduce scrap and re-work may lead to short-term gains but also ensures the likelihood of repeat occurrences. Finding more defects is not the same as permanently eliminating them.

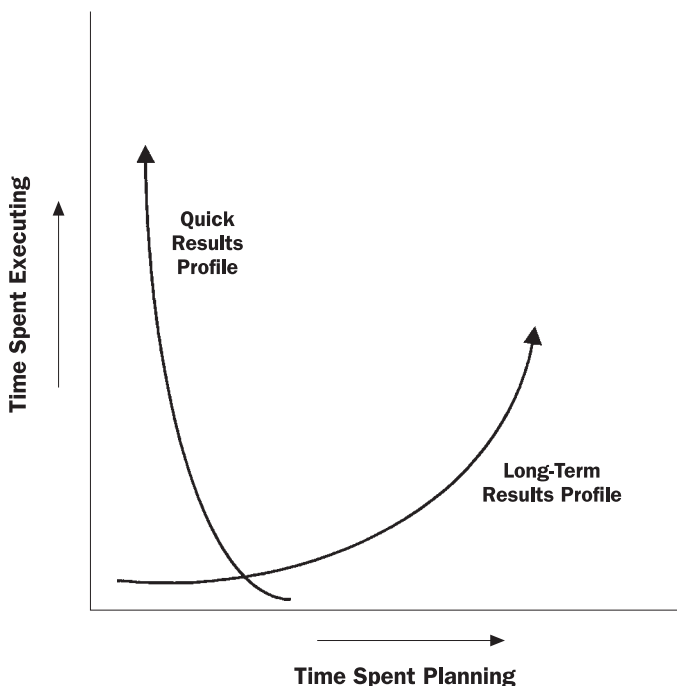
If the actions shown in Table VI are not the right things to do, then what are? First, let us look at the CEO's mandates more closely to determine their exact meanings. Table VII presents the CEO mandates, definition of key terms, and two levels of translation that must occur for the mandates to become more meaningful to workers. The translations help clarify the CEO's mandates into terms that can be better understood. But even so, people in engineering, manufacturing, purchasing, quality, and finance may still have difficulty relating their daily roles and responsibilities to some of the items listed. This will result in delays that will be difficult to overcome because the batch-and-queue mass production system is confusing and lacks a unifying theme such as the elimination of waste.

Table V
 Mass production responsibility matrix

Metric	Function				
	Engineering	Manufacturing	Purchasing	Quality	Finance
Cost	◇	◇	●		●
Delivery		●	◇		
Quality	◇	◇	◇	●	
Technical performance	●				

Notes: ● = Primary responsibility
 ◇ = Secondary responsibility

Figure 5
 Schematic diagram showing the primary approaches to launching new initiatives. The quick results profile minimizes planning and maximizes the time spent on execution. The long-term results profile engages in significantly more planning and managing the details associated with execution



Amorphous Conglomerate Company, well known for its formidable batch-and-queue mass production system, competes with Crystalline Manufacturing Company, which has been practicing lean production for seven years. Thus, all employees understand the basic concepts and apply the tools of lean production every day. The responsibilities of each function at Crystalline Manufacturing Co. will be better balanced (Table VIII) and more supportive of each other (Table II). Assume that the CEO of Crystalline Manufacturing made the same eight mandates as the new CEO from Amorphous Conglomerate Co. a few years earlier (a poor assumption since lean producers do not typically manage this way) – minus the factory closings, layoffs, and acquisition. How might employees in engineering, manufacturing, purchasing, quality, and

finance respond to make the CEO's mandates actionable within the context of their daily activities?

Table IX illustrates a balanced approach that can be significantly more responsive to challenging business conditions. First, engineering accepts responsibility for a few key parameters that address value as seen by customers and the ability of the company and its suppliers to operate as effective businesses. These include value engineering, design to target cost, using existing production parts in new designs, design to process capability, using common materials and processes, and designing products with short supply chains. Doing these things ensures that the customers' needs are met, while at the same time reducing part travel, lead-time, and production costs. This greatly helps eliminate waste in downstream

Table VI

Traditional mass production: functional focus

What the CEO says	What engineering people do	What manufacturing people do	What purchasing people do	What quality people do	What finance people do
1. Double net income					Figure out how many people to lay off, which budget category to cut and how much
2. Increase cash flow by 100%					Extend payments from 30 to 45 days Reduce collections from 45 to 30 days
3. Increase working capital turnover by 30% per year					Extend payments from 30 to 45 days Reduce collections from 45 to 30 days
4. Double inventory turns		Create new forecasts Reduce work-in-process Scrap aged inventory	Create new forecasts Buy less material Scrap aged inventory		Set inventory targets Track/control inventory more closely
5. Introduce ten new products over two years	Get budget for new product design work Create designs using evolutionary methods	Get budget for manufacturing new products	Get budget for purchasing new products		
6. Develop new products in half the time with half the money	Adhere to schedule and budget Focus on technical performance	Wait for engineering to complete new design	Wait for engineering to complete new design		Allocate budgets consistent with new product development financial targets
7. Reduce costs by 30%	Ask purchasing to increase purchase volumes	Ensure compliance with new manufacturing cost targets Outsource	Force suppliers to reduce prices Leverage/reduce supply base	Identify defects Increase sampling inspection frequency Audit internal/supplier quality systems Suspend suppliers for quality problems	Figure out how many people to lay off, which budget category to cut and how much Focus on unit cost
8. Improve product quality by 50%	Incorporate technical lessons learned from previous designs	Reduce scrap and re-work Troubleshoot processes	Make suppliers comply with new quality targets Impose financial penalty for non-conformances	Identify defects Increase sampling inspection frequency Audit internal/supplier quality systems Determine cause and corrective action	

Note: The items contained in this Table represent the activities that batch-and-queue manufacturers typically do as a first response to challenging CEO mandates. It does not represent all activities that are normally undertaken

Table VII
 Translating CEO mandates

CEO mandate	First-level translation	Second-level translation
1. Double net income Definition: Net income = revenues – expenses	Increase sales/market share Decrease expenses	Reduce lead-time Reduce direct costs Reduce indirect costs
2. Increase cash flow by 100% Definition: Cash flow = cash receipts – cash disbursements	Increase net income Improve asset utilization Decrease cash disbursements	Increase revenues Utilize existing human, financial, physical, and material resources Reduce lead-time
3. Increase working capital turnover by 30% per year Definitions: Working capital turnover = sales ÷ average working capital Average working capital = current assets – current liabilities	Increase sales Decrease average working capital	Reduce lead-time Reduce accounts payable
4. Double inventory turns Definition: Inventory turnover = cost of goods sold ÷ average inventory	Reduce cost of goods sold Reduce inventory	Reduce direct costs Reduce amount of work-in-process Reduce lead-time
5. Introduce ten new products over two years	Increase sales	Reduce lead-time
6. Develop new products in half the time with half the money	Revolutionary change in design practices Improve asset utilization	Apply best practices in design Utilize existing human, financial, physical, and material resources
7. Reduce cost by 30% Definitions: Direct cost = expenses that can be associated with specific products Indirect cost = expenses that cannot be associated with specific products	Reduce cost of goods sold Improve asset utilization	Reduce direct costs Reduce indirect costs Utilize existing human, financial, physical, and material resources
8. Improve product quality by 50%	Reduce non-conformances, scrap, re-work, and warranty costs	Eliminate variation

activities such as manufacturing, purchasing, and quality assurance. In other words, engineering helps set up the business to succeed in the marketplace by designing high quality and affordable products that meet the needs of customers.

Manufacturing then utilizes disciplined lean production processes and tools that ensure responsiveness to the changing conditions of the marketplace. Cost performance, on-time delivery, and quality become congruent, rather than conflicting goals. Purchasing, no longer relegated to chasing parts and forcing cost reductions upon suppliers, can now focus on strategic

management of supply chains. Purchasing, in cooperation with engineering, manufacturing, quality, and finance, develop valuable skills in commodity management, target costing, managing cost drivers, and root cause problem solving.

Because engineering and manufacturing accept responsibility for product quality, the quality organization can focus on eliminating defects rather than finding them. In addition, quality works with purchasing to develop suppliers' capabilities. Instead of reinforcing adversarial customer-supplier relationship, quality collaborates with suppliers to teach them lean production, root cause problem-solving methods, and defect elimination tools. The finance organization, no longer focused on unit cost and head-count reduction, participates with engineering, manufacturing, and purchasing in target costing, the identification of cost variances, total cost analyses, and root cause problem solving. And in times of distress, the finance organization helps find ways to better utilize human resources rather than treat them as variable costs to be eliminated.

Some of the solutions contained in Table IX might, at first glance, appear to be rigid or limit the creativity that employees normally

Table VIII
 Lean production responsibility matrix

Metric	Function				
	Engineering	Manufacturing	Purchasing	Quality	Finance
Cost	●	●	●	●	●
Delivery	●	●	●	●	◇
Quality	●	●	●	●	◇
Technical performance	●	◇	◇	◇	

Notes: ● = Primary responsibility
 ◇ = Secondary responsibility

apply to problem solving. But appearance is not reality. The application of lean production tools results in much greater opportunities for employees to exhibit creativity compared to the opportunities normally present in batch-and-queue mass production (Robinson, 1991). In fact, a saying often uttered in Kaizen events, “spend ideas, not dollars”, is designed to focus people’s efforts on their own deep capacity for generating effective and low-cost solutions to difficult problems. It works.

Tables V, VI, VIII and IX illustrate a remarkable shift in responsibilities and the type of activities that are performed in mass

and lean production businesses. Manufacturing businesses practicing lean production exhibit a greater amount of shared responsibility and the disciplined use of methods designed to increase asset utilization. The latter is particularly important because it leads to total cost leadership. For example, current production parts are assets that can be used when designing new products. Designing new products that contain 25 percent existing production parts can reduce development costs, lead-time, tooling expense, non-conformances, and warranty expense. It can also increase speed to market, simplify

Table IX
 Contemporary lean production: business/process focus

What the CEO says	What engineering people do	What manufacturing people do	What purchasing people do	What quality people do	What finance people do
1. Double net income	Design products with short supply chains Eliminate long lead-time products/services	Set-up reduction, one-piece flow, kanban, TPM, Kaizen, mistake-proofing, etc.	Limit size of supply base Teach lean methods to suppliers	Teach root cause methods Eliminate defects	Identify ways to re-deploy human assets
2. Increase cash flow by 100%	Design new products with 25% existing production parts	Set-up reduction, one-piece flow, kanban, TPM, Kaizen, mistake-proofing, etc.	Limit size of supply base Consolidate material requirements	Teach root cause methods Eliminate defects	Identify ways to re-deploy human assets Determine root cause of cost variances
3. Increase working capital turnover by 30% per year	Design new products with 25% existing production parts Eliminate long lead-time products/services	Set-up reduction, one-piece flow, kanban, TPM, Kaizen, mistake-proofing, etc.	Limit size of supply base Teach lean methods to suppliers	Teach root cause methods Eliminate defects	Identify cost drivers Determine root cause of cost variances
4. Double inventory turns	Design new products with 25% existing production parts	Set-up reduction, one-piece flow, kanban, TPM, Kaizen, mistake-proofing, etc.	Teach lean methods to suppliers	Teach root cause methods Eliminate defects	Support internal/supply chain lean production activities
5. Introduce ten new products over two years	Value engineering Design to target costs	Make to demand Kaizen	Know supply chain capabilities Kaizen purchasing process	Improve supplier quality systems Teach root cause methods	Support target cost discipline Determine process costs
6. Develop new products in half the time with half the money	Design new products with 25% existing production parts Use common materials and processes	Set-up reduction, one-piece flow, kanban, TPM, Kaizen, mistake-proofing, etc.	Teach lean methods to suppliers	Eliminate defects	Determine root cause of cost variances Identify cost drivers
7. Reduce costs by 30%	Design new products with 25% existing production parts Use common materials and processes Design to process capability	5S, Visual factory, TPM, set-up reduction, mistake-proofing, standard work, one-piece flow, kanban Kaizen Identify cost drivers	Use target costing Select lean suppliers Source parts in process families Identify cost drivers	Teach root cause methods Eliminate defects	Perform total cost analysis Target costing Identify cost drivers Identify ways to re-deploy human assets
8. Improve product quality by 50%	Use common materials and processes Design to process capability Participate in root cause analysis	5S, total productive maintenance 5 Whys, fishbone, etc. Mistake-proofing Participate in root cause analysis	Select lean suppliers Source parts in process families Participate in root cause analysis	Participate in root cause analysis Eliminate defects	Identify cost drivers Participate in root cause analysis

Notes: The items contained in this Table represent the activities that lean producers typically do, or should do, as a first response to challenging CEO mandates. It does not represent all activities that are normally undertaken. The functional boundaries in Table IX are not intended to be as distinct as indicated in Table VI

materials management, limit growth of the supply base, and help achieve target costs. Common materials and processes are lower cost assets that, if utilized, will help reduce lead-times, improve on-time delivery performance, achieve cost targets, and reduce scrap and re-work.

Purchasing's asset is its supply chains. These assets are much better utilized in lean production because suppliers are closely aligned with their customers' interests, focused on core competencies, and synchronized to reliably meet their customers' needs. The relationship is viewed as long-term and one of mutual benefit, resulting in smaller numbers of high performing suppliers. Kaizen activities also focus on ways to better utilize assets and allow the business to do more with existing resources. The overall result is significantly better utilization of human, financial, physical, and material resources. Conducting business in this manner can result in fewer contradictions, thus giving the primary stakeholders a much better chance of success.

Engaging key stakeholders

The new CEO of Amorphous Conglomerate Co. is off to a great start with the investment community. But what about the employees? If employees do not understand the mandates, then their response to them will be ineffective and could indicate to the CEO that they cannot get the job done, possibly resulting in additional layoffs. Employees' fear of layoffs can then make both non-performance and future layoffs a self-fulfilling prophecy.

In addition to not understanding what the new mandates mean, employees are further confused by the well intentioned yet mixed messages expressed by the CEO. There are numerous contradictions, summarized in Table X, which typically lead to defective outcomes. In general, confusion over mixed messages damages the business, as well as the people involved, by making the environment more threatening. The normal response is to develop an inward focus, fight amongst each other, create winners and losers, and look for ways to shift the blame to others. People will adhere to what they know how to do and avoid experimenting with new methods. In other words, the corporate culture becomes highly political, and, over time, it becomes more acceptable for functions, departments, or business units to battle against each other instead of the competition. Corporate politics is one of the

most potent forms of behavioral waste because the interests of external stakeholders become greatly diminished.

So rather than engaging employees, the CEO has inadvertently divided them. The organization will surely misbehave (Table X). Amorphous Conglomerate Co.'s supply chains will also likely suffer in two ways. First, businesses that make up the extended enterprise will also be confused by the CEO's mixed messages such as "the company and shareholders must win". To many that is translated to mean: "The CEO says it's OK for suppliers to lose" – probably through higher variable costs or reduced profits brought on by having to conform to unusual business practices. Second, employees preoccupied with internal politics will be forced to spend their efforts ensuring internal survival rather than respond to the needs of external suppliers. Customers and investors face a similar dilemma, while astute competitors will know how to exploit this opportunity-rich situation for many years to come.

It is logical that employees cannot execute the business plan if they do not understand what the mandates mean to them in the context of their daily work or are confused by the CEO's mixed messages. So in this example, the top leader and most highly paid executive has set the company on an unproductive course in both operations and human behaviors (Tables II, III and IV) due to poor critical thinking skills. But the investment community is happy, for now, because the CEO appears to have established a solid recovery plan. They too must lack critical thinking skills.

This sets off another interesting layer of unresolvable conflict. Predictably, Amorphous Conglomerate Company's human resource managers become locked in a never-ending struggle with other functional departments over who is responsible for human assets, conveniently divided into two parts: mind and body. The human resources department typically accepts responsibility for only the body since operating managers control the minds. Operating managers, however, want to own the body and expect human resources to fix the mind that they have damaged in their quest to meet the CEO's mandates. The human asset thus remains forever underutilized. Expensive training programs are usually developed by human resource specialists to try and re-claim employees' minds on behalf of operating managers. This is fundamentally flawed since the training is orthogonal to management's actual practices (Figure 3), and the return on investment will surely be negative. At least the operating managers cannot say that

Table X
 Effectiveness of the CEO's comments

What the CEO said	Contradiction	Possible outcomes
Close two factories and reduce workforce by 18%	Come together as a family	Family feuds Deteriorating morale and loyalty
Reduce the workforce by 18%	Acquiring a new business increases headcount and fixed costs	Debilitating internal focus Difficulty integrating cultures
Work together in teams	Reduce the workforce by 18%	Fearing layoffs, people compete against each other Knowledge is hoarded Debilitating internal focus Environment becomes more political
Fight, attack the enemy, take no prisoners, survive	Work together in teams Come together as a family	In-fighting Beat up suppliers for cost reduction Severe lapses in ethical behavior
The situation is urgent	Work harder and smarter	Little planning Focus on results Use traditional tools and methods Go for the quick wins
Put your head down and grind it out	Work together in teams	Don't think, just do Debilitating internal focus Reduced employee feedback
Employees are intelligent and will find ways to achieve the goals	Put your head down and grind it out	Do what comes easy to satisfy management Little planning Focus on results Go for the quick wins
Company and shareholders must win	Someone else must lose Come together as a family	Employees lose Suppliers lose Customers lose
New era of personal accountability for performance	Come together as a family Work together in teams	Only good news is delivered Blame others In-fighting Go for the quick wins Focus on results Environment becomes more political Severe lapses in ethical behavior
Reorganize from strategic business units to global product centers to better serve customers	Reorganizations require intense internal focus	Additional hierarchy Environment becomes more political Investment community becomes concerned
Reduce costs	Spend money on new acquisition	In-fighting Don't deliver bad news
There are no barriers	There are many significant barriers	Confusion over what is a barrier and what isn't Difficulty overcoming barriers Don't deliver bad news

human resources are not doing something about their problem – a non-value added political victory for both groups, but a clear loss for employees and the company.

How might the management team of Crystalline Manufacturing Company respond to new competitive threats? Facing yet another business challenge, the CEO discovers that there is congruence between the concepts of eliminating waste in production and the elimination of behavioral waste (Tables II and III, Figure 6). The company understands the former well, and

the management team sees an opportunity to gain additional competitive advantage against Amorphous Conglomerate Co. by identifying and modeling human behaviors that are valued by key stakeholders. A new type of balanced scorecard is introduced to employees for their evaluation (Figure 7). The scorecard better addresses the interests of the four key stakeholders – customers, investors, employees, and suppliers – within a framework that integrates both production and behavioral elements of work. The solution is lean behaviors.

What the management team of Crystalline Manufacturing Co. has done is simply to recognize that human behavior is a tremendous asset that can be more effectively utilized than previously thought. But in order to do this, the behavioral solution must be practiced by all managers. If successful, employees will naturally replicate their behavior without the need for numerous expensive leadership training programs.

There is a tremendous amount of waste in production as evidenced by the results of Kaizen events where 50-90 percent improvements are typically realized. Learning to see waste in production is a skill that is developed over time. Likewise, learning to see behavioral waste is also a skill acquired over time, but it is not a separate skill. The congruence of lean production and lean behaviors makes it easier to develop these competencies in tandem. Eliminating behavioral waste will have many positive benefits to a company and its stakeholders, on both personal and organizational levels.

For example, knowledge is an asset that remains forever locked in people's minds when they face threats. Information – not knowledge – is traded, often on a tit-for-tat basis, when people are required to do so. Compliance is the main reason for sharing information in defective organizations.

Figure 6

An iceberg depicts the waste normally present in human behaviors that is both clearly visible and less visible. The words written above the water line show those behaviors, sounds, thoughts, feelings, or expressions that are easily seen by other people through the course of normal interaction. The words written below the surface depict the thoughts, behaviors, feelings, actions, or expressions that are less likely to be seen by others because they may be hidden in one's mind. Behavioral waste can exist both above and below the water line. In either case we should seek to eliminate behavioral waste where it is possible to do so

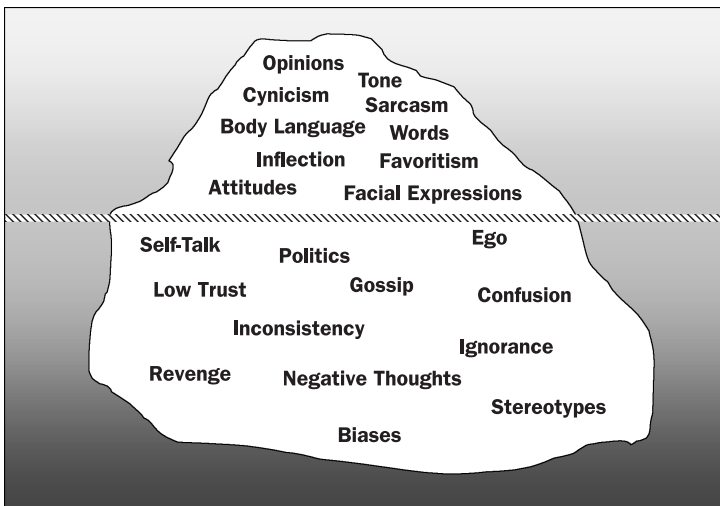


Figure 7

Example of a new “re-balanced” scorecard that is more evenly distributed between key internal and external stakeholders. This scorecard can eliminate the problems that typically occur when management focuses on one stakeholder at the expense of others

Customer <ul style="list-style-type: none"> • Returns • Overdue • Customer Satisfaction • Market Share 	Employees <ul style="list-style-type: none"> • Employee Satisfaction Survey • Retention Rate • Compensation • Skill Gaps
Investors <ul style="list-style-type: none"> • Earnings per Share • Net Income • Cash Flow • Inventory Turns • Return on Invested Capital 	Suppliers <ul style="list-style-type: none"> • Quality • Lead-Time • On-Time Delivery • Cost Performance • Supplier Satisfaction

Conversely, people working in environments free of threatening fat behaviors more easily share knowledge, and lean behaviors help free this asset for productive use. With the appropriate information technology infrastructure, the potential of knowledge management can now be realized. New ideas are valued and can be transformed into action more quickly to deliver competitive advantage.

The rate of productivity improvement is widely believed by economists, even those specializing in manufacturing productivity, to be limited to the low single digits on an annualized basis (Schlesinger, 1999). This view is rooted in the mass production mindset, particularly the notion of learning curves which indicate diminishing returns after a process is learned-out (Figure 8). Lean production, however, demonstrates that productivity can be continuously improved, with no limit, by identifying and eliminating waste using Kaizen and related tools. So no matter how hard you squeeze the lemon, it always produces more juice. Properly applied, lean production benefits all stakeholders.

Lean behaviors extend the definition of productivity to include human behaviors (Figure 6). The amount of waste present in human behaviors is probably greater than the waste that exists in production. Finding and eliminating behavioral waste can have a profound impact on overall business productivity and sustain high rates of productivity improvement. This is the

opportunity that the senior managers of Crystalline Manufacturing Company want to pursue, and subsequent decision making will center upon the principles of lean production and lean behaviors (Table XI).

The *nouveau* investment analyst

The problems that Amorphous Conglomerate Co. will encounter during its re-structuring are due in large part to a lack of critical thinking by the executive team. Another significant component is the strong influence of the single-minded investment community. They expect to hear bold mandates and stretch targets followed by aggressive and effective execution and readily accept fat behaviors as effective demonstration of leadership. If the CEO's focused response to the investment community's interests generally results in a large amount of chaos for some stakeholders, then a few simple questions must be asked: Is the investment community providing the correct direction to the company? Can they give better guidance to the CEO? Should their interests weigh more heavily upon the CEO compared to other stakeholders? If so, then by how much?

To answer these questions we must first understand what an investment analyst does.

Figure 8

This 90 percent learning curve implies that learning is a continuous function and that there is a limit to the amount of improvement that can be achieved. It suggests that workers accept that significant improvement cannot be achieved beyond about 140 units. The learning curve does not exist in lean production because waste can be eliminated through ongoing Kaizen activities and the labor required per part is independent of the number of units produced in one-piece flow production

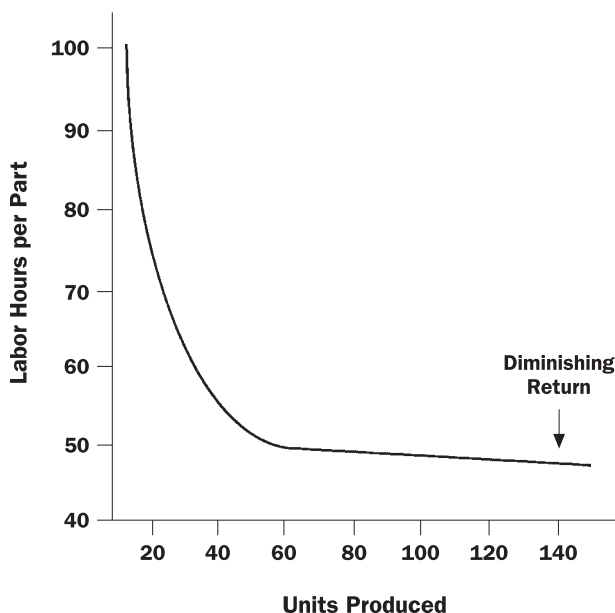


Table XI

The new CEO playlist

Lean production
 Lean behaviors

In a nutshell, they determine which companies do the best job of creating shareholder value. So what do investment analysts look for when they evaluate the current health and estimate the future financial performance of a company? They analyze earning per share growth, cash flow, earnings before interest and taxes, net income, return on invested capital, inventory turnover. They use financial ratios to determine liquidity, leverage, profitability, and market value. And they also look at other factors that can affect the company's financial performance such as lawsuits, commodity prices, market share, pricing structure, foreign currency fluctuations, pension fund liabilities, environmental issues, etc. While many non-financial factors are analyzed, the net result is always to relate this information back to fundamental financial performance.

Analysts generally like to follow a few key fundamental performance indicators such as earnings per share growth, net income, cash flow, or return on invested capital. In other words, they focus on the income statement. This, in turn, is what CEOs do to meet investors' demands that financial assets be efficiently utilized. Compensation systems are appropriately aligned to ensure financial results that meet investors' expectations. However, the balance sheet is becoming a more important indicator as new business models require far fewer assets to compete against asset-rich businesses, thus creating vastly different demands for working capital and the returns that can be achieved from it.

Analysts may advise CEOs to "keep it simple" when discussing ways to improve the company's financial performance. This is easier to do if the focus is only on financial performance. But in reality, business is usually very complex and involves more than just one stakeholder – a point that may be under-appreciated by investment analysts positioned on the outside looking in. Advice from highly influential shareholders to "keep it simple" will have great appeal to CEOs facing hundreds of complex issues. Too bad for the other stakeholders that the company depends on for success. Investment analysts may also urge executives to "think outside of the box" in order help them break free of business traditions that impair financial performance in competitive markets. It is easy advice to give but hard for managers to

make actionable in companies dependent upon fat behaviors. Do analysts “think outside of the box” in how they value corporations? No, they are firmly positioned inside the box. But what if they were not? What might investment analysts look for when they evaluate the current health and estimate the future financial performance of a company?

First, we must acknowledge that the way sustainable value is created is by stakeholders working together to achieve common goals. Second, the investment community could improve their methods of analysis to better reflect the complex environment that large public companies actually operate in, which brings us back to the re-balanced scorecard shown in Figure 7. Investors could put their tremendous influence and regular access to senior executives to even better use. They could ask senior management a few extra questions to determine their commitment and responsiveness to the interests of the other three key stakeholders – customers, employees, and suppliers – and ask how waste is being eliminated in business processes that include these stakeholders. This would put appropriate pressure on senior management to ensure that the basic needs of customers, employees, and suppliers are met in order to ensure prosperity for everyone.

Prompted by investors, senior managers would begin to see the other stakeholders from different perspectives. Managers would soon realize that wasteful fat behaviors are tremendously unproductive and do not even serve their own self-centered interests. Customers, employees, and suppliers might then be viewed as important assets that can be better utilized by applying Kaizen methods to workplace behaviors. For example, from a supplier’s perspective, the companies it sells to compete for its goods or services. Suppliers will invariably prefer to do business with only the best customers – typically those whose business practices are low cost, reliable, and fair. Every executive wants to delight shareholders. Most executives want to delight customers. Why not try to delight employees and suppliers as well?

Investment analysts could benefit by asking senior management pointed questions related to the metrics contained in the scorecard shown in Figure 7. For example, they will gain a better understanding of a company’s performance across important dimensions that are not typically discussed today but which ultimately determine its total position and future performance in the

marketplace. Specifically, the ongoing supply of customers, talented employees, and leading providers of goods and services. A company that is inconsistent generally has poor working relationships with its stakeholders and fosters expensive opportunistic behaviors.

Stakeholders working from the same scorecard would help eliminate confusion and conflicting interests. Investors should also begin to evaluate the level of excellence in support functions such as human resources, marketing, communications, training, EH&S, legal, sales, MIS, facilities, etc., by asking what these important functions are doing to eliminate waste. After all, what stakeholder wants to pay for wasteful fat behaviors or non-manufacturing business processes that create waste?

Summary

Past attempts to unify business and leadership models have not been successful because the basic assumptions are rooted in traditional thinking. Perhaps the most obvious example is the common view that technical and interpersonal (i.e. emotional) are separate, albeit synergistic, skills (Goleman, 1998). This results in corporate training programs that typically target one skill or another, but not both simultaneously. The solution outlined in this paper integrates technical and behavioral components, and utilizes the more easily learned technical skills to serve as the anchor for improving behavioral skills.

The integrated lean production + lean behaviors solution provides a structured approach to change in business settings, and is based upon a simple idea that most people can relate to: the elimination of waste in production and behaviors. It is not a “program of the month”, but a way of life. The lean production + lean behaviors solution sets clear direction, identifies specific activities to perform, aligns people, and establishes the foundation for motivating people. Behavioral waste and confusion are reduced so that people can focus on doing work that adds value in the eyes of the customer, which ultimately benefits employees, suppliers, and investors.

The leaders of companies seeking to implement the lean production + lean behaviors solution must be mindful of the challenges that they are subscribing to because it requires dedicated unlearning of embedded mindsets and habits. Operating productivity can often be achieved by fiat, but the wellspring of behavioral productivity

cannot. Key success factors in implementation include:

- Long-term and unwavering personal commitment by all senior managers.
- Gaining a deep understanding of both lean production and lean behaviors.
- Understanding current business processes and the behaviors that limit productivity through stakeholder feedback and root cause analysis.
- Defining the desired future business processes and behaviors.
- Engaging in daily practice of the unified system (i.e. action learning).
- Educating key stakeholders on plans, process, and progress.
- Documenting and sharing experiences.
- Resisting temptations to engage in corrupted forms of lean production and lean behaviors.

Lean production + lean behaviors solution is applicable not just to automobile makers, but to all types of manufacturers interested in developing a truly lean business. The basic principles also apply to service businesses. In addition, the lean production + lean behaviors solution is a more ethical solution for business decision making. It encompasses the interests of key stakeholders in complementary rather than conflicting ways, and assigns responsibility, perhaps even a moral obligation, to management for achieving behavioral productivity in tandem with operating productivity. Think critically about the inescapable ethical traps, moral dilemmas, and unintended consequences of the discontinuous actions regularly performed by most CEOs, as well as the complexity, contradictions, distrust, and confusion inherent to orthogonal management systems compared to aligned lean business systems.

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Further reading

- Ansari, S., Bell, J., Klammer, T. and Lawrence, C. (1997), *Management Accounting in the Age of Lean Production*, Irwin McGraw-Hill, New York, NY.

Appendix. Corrupting lean behaviors

Properly applied, lean behaviors can benefit all stakeholders. But like any new idea, lean behaviors can become corrupted by those who latch on to it before gaining a full understanding of its meaning. This has happened many times over the years, starting with Taylor's scientific management principles, Hammer's re-engineering model (Hammer and Champy, 1993), and more recently with Toyota's lean production system (Womack and Fitzpatrick, 1999). Selective application or even misapplication of these management methods has resulted in unintended consequences and inaccurate characterizations.

Lean behaviors could become corrupted if adopted by a highly political organization that continues to exhibit wasteful fat behaviors. Practicing lean behaviors (Emiliani, 1998a, 1998b) could become "politically correct", which would only perpetuate fat behaviors such as defensive routines, blame, confusion, and negativity. People might also start labeling each other as lean or fat, or comparing people that behave lean with those that possess a preponderance of fat behaviors. Such comparisons would be very wasteful. Labels could also be used to gain advantage by tarnishing the reputation of colleagues or adversaries. People could

also spend their time talking about who behaves lean and who exhibits fat behaviors – yet another form of waste.

The interpretation of fat or lean behaviors could become subjective or situation-specific. Productive behaviors may become confused with non-productive behaviors depending upon the context. People could play games and try to provoke fat behaviors in front of others to test one's commitment to lean behaviors. Organizations undergoing significant change or those expecting quick results will likely have difficulty developing lean behaviors because business results may be more highly valued than commitment to processes that consistently yield sustainable results.

Defensive behaviors caused by misuse of lean behaviors will likely prevent potentially helpful dialog, discussion, or debate – necessary components of teamwork, problem solving, and creativity in business. And thinking that lean behaviors mean that we

should operate or behave in the absence of feelings or emotions would be another way of corrupting lean behaviors. So would thinking that lean behaviors mean we should be silent, or that total self-control is the most desirable state. In addition, inventing new metrics for the purpose of measuring specific personal or organizational lean behaviors would be counterproductive.

Lastly, thinking that everyone will one day be free of fat behaviors is another way to corrupt lean behaviors. Behavioral waste will continue to exist, and there may be specific conditions under which this is acceptable. For example, disagreements and other types of interpersonal tension can be important contributors to creativity or the development of people, organizations, products, or services. However, managers must be extremely mindful of fat behaviors because they can be potent destroyers of trust, morale, commitment, and self-esteem.

Application questions

- 1 How would you see the integrated lean production + lean behaviours solution helping your company?
- 2 Do you think the interests of all key stakeholders can be accommodated, making behaviours “lean”? How would you go about educating both staff and stakeholders?