

ENTHUSIASM FOR LEAN

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ABSTRACT

Despite implementing the continuous improvement and respect for people principles as understood from the current research, many lean transformations fail. This paper provides an argument that there is a missing yet important set of elements supporting these principles that needs to be understood.

For many lean leaders and coaches a primary concern is obtaining the full engagement of everyone on a project team in lean practices. This paper recommends a new area for research and experimentation, tapping the holistic aspects of lean, not only as they apply to the enterprise or project, but also as they apply to the individual. It examines new ideas about how enthusiasm for lean can be methodically generated in the building design and construction industry.

Borrowing from her work in business culture change, one of the authors (McGuffey) has developed a 'legacy transformation model' that identifies the elements at work in the early years of the Toyota Motor Corporation. The model was tested against prior research to determine if testing the model on building projects in a comprehensive manner is warranted; the results of which are reported herein. Further research requiring the commitment of project teams to pilot a lean transformation process based on the legacy transformation model is proposed.

KEYWORDS

Transformation, commitment, language, purpose, connection, core identity, enthusiasm.

INTRODUCTION

The primary reasons for the intergenerational success of the Toyota Production System (TPS), and therefore lean practices, have been misunderstood. This is a result of the background and biases of the people attracted to the study of TPS. They bring with them a vocabulary based on production processes. When that was found to be incomplete attention was turned toward the design of social systems. While production processes and social system design are important components of the success of TPS, the foundation for this success was based on widespread deeply personal connections to a meaningful purpose.

This gap in understanding came to light during a 2017 workshop the authors led, focused on understanding how artists would interpret what is known as "lean thinking." The workshop was held because lean has largely been observed and interpreted by people

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with an engineering and social science mindset. Since our biases and vocabulary affect how we interpret the world we observe it was theorized, and subsequently demonstrated, that artists have insights into lean and TPS that had heretofore been elusive.

The artists' insights, along with business culture development work, provoked research into the history of Toyota extending back to the Meiji Restoration and the early development of Sakichi Toyoda. This history, set in the context of the rapid social changes transforming the people of Japan, along with research into human performance, led to the observation that four integrated elements are present that cause transformations to be sustained. This observation led one of the authors (McGuffey) to develop a transformation model that establishes a methodology for developing and integrating these four elements. They are as follows:

- **Connection:** Nurturing of personal relationships with an individual's work team, including the composition of a shared core identity aligned with the team's purpose.
- **Cognition:** Daily awareness of others and the surrounding world through observational experience practiced along with the mindfulness of knowing how you, as an individual, show up in relationship to purpose.
- **Commitment:** Engaged dedication and clarity regarding understanding one's core identity, team shared core identity, responsibilities to others on and outside the team, and the challenge the team has undertaken.
- **Challenge:** A meaningful goal, aligned with purpose, that is not possible given the team's current capabilities and knowledge. This impossibility informs the team's needed growth.

This paper looks at evidence that some or all of these elements have contributed to the implementation of lean practices, reports on how the four elements were present within Toyota prior to the beginnings of TPS, and proposes research to refine the application of the transformation model methodology.

CURRENT KNOWLEDGE

IGLC RESEARCH

Searches of IGLC papers using the terms "engagement," "passion," and "enthusiasm" were undertaken. Nineteen papers were identified using the term "engagement." No papers were identified using the term "passion." Four papers were identified using the word "enthusiasm."

Nine of these twenty-three papers addressed in part the importance of project team engagement or enthusiasm for using lean practices. While no comprehensive application of the 'legacy transformation model' is evidenced, there are references to elements of the model being employed in the work studied by these papers. There were experiences reported from case studies that reinforced the premise that engagement at the individual or personal level is an important consideration. The consideration is also important outside the building design and construction industry, with comments such as "People engagement

is the hardest thing to achieve – that to me is clear” by a veterinarian using lean principles in his practice being an example (Tassasón 2018).

Connection: Preceding research indicates a relationship between specific elements of the transformation model and engagement in lean practices. A case study from Scandinavia found that the element of Connection, described as the degree of familiarity and community, and the willingness to take others’ perspectives, correlates to the degree of engagement and collaboration in lean work (Skinnarland and Yndesdal 2010). It is difficult to connect with others when we value others based on some classification. An example is the prevalence of gender bias on projects, whether they use lean practices or not. There is evidence that lean projects may be even more susceptible to gender bias (Arroyo et al. 2018). The practice of applying labels and expectations on people because of gender, race, religion or other group distinctions hinders people from connecting with each other. Distinctions between professional affiliations and education are other common areas where bias occurs.

Cognition: A case study of what practices support value generation on a project looked at aligning actions purposefully with project goals. It found that having a means of regularly reviewing how goals were being met and adjusting actions accordingly enables teams to pursue value (Tillman et al. 2013). This regular review, in the context of seeking to understand project conditions as they really are, is a form of cognition.

Commitment: The focus on securing buy in among trade contractors for lean working practices was a focus of a case study in which a number of activities were employed to develop a common understanding of rules and guiding principles for the project (Pasquire and Court 2013). It was found that a common understanding delivered progress toward eliminating waste and safely increasing productivity.

Challenge: Related to the model is the lean principle of “respect for people,” which has had little direct research in design and construction and is necessary for sustaining continuous improvement efforts (Korb 2016). This paper specifically mentions the need to engage the eyes, hearts, brains, and hands of the people in an organization – in the context of continuous improvement as a way to challenge the development of individuals in a project organization. Past work acknowledges the need for eyes, go and see; brains, the Toyota Thinking System; and hands, experiments. The inclusion of hearts relates to the importance of Connection and Challenge – seeking to engage the heart as well as the head in a holistic manner.

CURRENT APPROACH TO CHANGE

Much of the literature regarding lean related change discusses the need to induce new behaviors, with the expectation that people can act their way into lean practices. This inducing of behaviors utilizes strategies such as peer pressure (Raghavan et al. 2016). It is argued that a focus on leadership behaviors should take precedence over lean tools (Orr 2005). The inducing of behaviors, whether by reward or punishment, is behavior modification, or behaviorism. This focus on behavior is part of the mainstream in lean practice. A search of the Lean Enterprise Institute website for work related to “behaviors” yields seventy-two articles, sixteen case studies, and twenty-four workshops. Much of this work focuses on behavior change through reward, punishments, or peer pressure.

BEHAVIOR IS A SYMPTOM, NOT A ROOT CAUSE

A focus on behavior however deals with a surface action, and not the root cause of a human action, and a lean practice seeks to understand the root cause of a concern. In terms of human action, root causes are related to a person's conception of their nature. Ideally this nature is a projection of their authentic self, however even small traumas in a human life can cause protective personas to mask the authentic self (Bennett 2017 pp. 24–32).

While the idea of modeling lean behaviors is to demonstrate a more productive way of working, there is a case against using behaviorism. Research finds four significant concerns with behaviorism (Enright 2018).

- **Nominalism:** Behaviorism implies that we do not have a common nature as humans, and that our capacity for action is limited by experience. Yet as humans we do have common needs, including an innate need for connection, as well as respect, appreciation, and satisfaction.
- **Materialism:** Behaviorism implies that only a material world exists, and that the spiritual world is not real. Love and friendship for example therefore must be a behavior, and not related to a need informed by our inner conscious.
- **No Free Will:** If our actions are informed by the behaviors modeled for or forced upon us, then we do not have free will. All our actions result solely from the reinforcements and punishments we experienced
- **No Purpose in Life:** If there is no free will, then we cannot determine a purpose toward which we decide to strive. The concept of a common purpose cannot exist, as we will have experienced different behavioral stimuli.

Clearly the founders of Toyota and the early developers of the Toyota Production System did not exhibit any of these characteristics. Quite the opposite, in word and action there was a clear understanding of human connection, spiritual connection, self-determinism and commitment to a meaningful purpose. Just as clearly, behaviorism is directly opposed to the *respect for people* principle, which has also be translated as *respect for human nature (ningensei)* (Miller 2018).

Life experiences demonstrate the futility of behaviorism. We recognize that demanding that a child apologize will affect behavior temporarily, and yet if the behavior was to appease the demand and not reflective of any true feelings of remorse we have accomplished very little. Simply changing behavior is insufficient, and does not result in lasting change. If we however can appeal to that child's connection to the aggrieved on a human level and the importance of all such similar connections then we have an opportunity for the child to apologize appropriately. Importantly this appeal to connection may fail if through continued exposure to a behavior based discipline the child has developed coping strategies that hinder connection to other people (Dweck 2016 pp. 242–243).

ARTISTS' PERSPECTIVE ON LEAN

In 2017 the authors made an assessment that the lack of widespread acceptance of lean practices was related to the way the Toyota Production System (TPS) was being interpreted. The people studying TPS largely have engineering and scientific backgrounds, which have been invaluable from the perspective of understanding process. The authors speculated that these process oriented backgrounds and accompanying vocabulary failed to capture holistically the development of TPS, and in turn lean practices. Lean is after all an interpretation of the Toyota story made largely to fit an understanding of what men with an engineering perspective thought would improve work processes and therefore earn more profit in less time. The Respect for People principle only gained traction after Jeffrey Liker included it in his book *The Toyota Way*. While many people cite the principal, Toyota turns out to be a rare example of making better humans who help other humans be better workers and better people. Unfortunately much lean writing focuses on making more productive workers as if they are machines. People with a different perspective on work and life may see what happened at Toyota differently.

To test this assessment the authors organized a three-day workshop wherein a group of seven artists were introduced to lean through conversations with lean experts and a tour of the Toyota manufacturing facility in Georgetown, Kentucky. The lean experts included Robert Martichenko, Deborah McGee, Niklas Modig, Karyn Ross, John Shook, and David Verble. The workshop participants included professional artists from music, literature, theatre, visual arts, and poetry. These seven people provided three insights relevant to the developing enthusiasm for lean (Richert 2018).

The first insight is that lean is a creative ethic. This challenges the idea that lean is the scientific method applied to work. The term scientific method does not refer to an abstract methodology, as the term is a rhetorical device that serves to assure others that facts and reason were the basis for a course of action (Thurs 2015). By understanding that lean generally, and the Plan, Do, Check, Act (PDCA) cycle specifically, are about learning and creativity the artists start to open lean to a wider audience.

The second insight is that the roots of lean stem from spiritual influences. This assertion came during a discussion with John Shook wherein he was explaining the influences informing the development of TPS. While the influences spanned a wide range, from social, technical, scientific, craft and spiritual practices, it was the spiritual that the artists recognized as providing the energy serving as the catalyst for what became TPS. They understood Buddhism, Bushido, and Nichiren as far more impactful than Darwin, Ford, and Taylor.

The third insight is that lean is a practice in search of a language, meaning the language of lean is incomplete. People able to generate enthusiasm for lean appear to have a vocabulary that allows them to fill in the missing parts of this incomplete language. Most people cannot, and therefore do not accept that lean approaches are preferable to practices they already employ.

Taken together, these insights explain why generating a sustained enthusiasm for lean is difficult. Lean is explained to people in a manner that does not capture the holistic nature of its development; therefore practices that for process minded people appear eminently

rational make little sense to most people. It also explains that while people will engage with lean when led by a strong leader committed to lean, once that leader moves elsewhere and is replaced by a different minded leader, the lean practices are easily replaced as well (Liker and Convis 2012).

WHAT HAPPENED AT TOYOTA

Most interpretations of the lean story start with Taiichi Ohno and his work developing TPS. There are passing references to the role Sakichi Toyoda played in developing the concept of automation for the mechanical loom, however Sakichi's influence runs far deeper than his technical expertise in mechanical invention. Similarly, there is relatively little mention of Kiichiro, Sakichi's son and founder of the Toyota company, and yet it was Kiichiro that established the practice of standardized work and who foresaw the need for just-in-time part delivery.

As, if not more, important was Kiichiro's documentation of five precepts he attributed to Sakichi. These precepts became not the values, but the spirit of the Toyota Motor Company. The distinction is important. Values define ideal traits a person or organization seeks to portray. Spirit is the essence of who a person or organization is at the core. English translations of the precepts vary. The following are the precepts ("Toyoda Precepts: The base of the Global Vision" 2012).

- Be contributive to the development and welfare of the country by working together, regardless of position, in faithfully fulfilling your duties.
- Always be studious and creative, striving to stay ahead of the times.
- Always be practical and avoid frivolousness.
- Always strive to build a homelike atmosphere at work that is warm and friendly.
- Always have respect for God and remember to be grateful at all times.

Here is what the artists, because of their focus, background, and vocabulary, recognized.

- The key to Toyota's success, the success of the Toyota Production System, and the success of lean when it can be sustained, is that there is a shared spirit of contribution to a greater cause. The work is meaningful, and that meaning is felt at a personal level.

Through researching the history of Toyota, along with the history of Japan including the distinctions between Japan's rural and urban cultures in the late nineteenth and early twentieth centuries, it is apparent that the four elements of the McGuffey transformation model, Connection, Challenge, Commitment, and Cognition are at work.

CONNECTION

The "respect for people" principle of The Toyota Way derives from a longstanding practice of viewing the employees of Toyota as members of an extended family. These familial relationships at Toyota differ than the other Japanese companies, and the distinctions arise from the differences between the rural background of the Toyoda family and the urban nature of other companies. Whereas in many Japanese companies patriarchal structures serve as a way of communicating hierarchical authority in a familiar context, at Toyota the

relationships embodied the spirit of the rural community, where people bonded together and looked after each other. This greater connectedness was necessary in farming societies where my neighbor's bad fortune regarding a poor harvest this year may be my bad fortune next year. Supporting each other was a matter of survival (Togo and Wartman 1993 p. 8).

Likewise, the early years at Toyota Motor were a mutual struggle for survival. In the 1930s this struggle was economic, as the company competed against U.S. and domestic automobile makers. In the post World War II period the struggle for survival was literal, as the average Japanese diet consisted of seven hundred calories per day and the Toyota employees farmed the land around the factory for food for their families (Togo and Wartman 1993 pp. 87–94).

Today Toyota Motor continues a focus on relationships through a team approach to manufacturing and design, making funds available for team social activities outside work, daily coaching, and a policy of not laying off workers during slow economies. The aspect of the Toyota Georgetown plant that most surprised the artists during the 2017 workshop was the social nature of a workplace they wrongly presumed to be cold, machine-like and impersonal.

COGNITION

The model applies the practice of Cognition to the understanding by an individual of their personal core identity, and how that identity is aligned with the purpose of their work. While the Toyoda family and other leaders of the Toyota Motor Company through the development of TPS may not have been deliberate about understanding this alignment in terms of personal core identity, this is what happened. A review of the personal history of these people reveals that beginning with Sakichi, they persisted in pursuing work consistent with their identity. Sakichi, for example, was expected to work as a farmer and carpenter as his father did. He rejected these expectations to pursue work as an inventor.

Understanding their identities, these early leaders of Toyota connected themselves to a purpose with meaning important to them – the elevation of the Japanese people from feudal medieval lives to lives on par with the wealthier nations of the west. Today Japan is an economically strong nation and Toyota is a global company. Toyota's meaningful focus has shifted toward serving. They impact communities and contribute to a cleaner global environment (“Toyota Global Vision” 2019). Connecting all employees to this meaning is a continuous focus of management.

COMMITMENT

Commitment in terms of the transformation model is a deeper concept than promise making. Commitment requires clarity to self-understanding, purpose, relationships, and to the way people will work together for mutual benefit with purposeful intent. The documenting of the Five Precepts was the first step Toyota Motor took toward creating this kind of clarity. Additional examples are found in their approach toward creating standardized work, A3 problem solving, and Kanban cart communication systems. Visual management, audible signals, and physical layout are very sensory-oriented methods Toyota Motor uses to establish clarity in communications.

CHALLENGE

It was a goal of Sakichi Toyoda that his son, Kiichiro, establish the best automobile company in the world. This was an audacious challenge given that General Motors and Ford Motor Company had already established dominant positions in the global market, and would soon be building cars in Japan. As daunting, while the Toyoda Loom Works company Sakichi has founded supplied the initial funds required to start the automobile venture, the industry was shifting into a capital intensive, mass production mode of operating that conventionally would require additional investment. In the 1930s the Japanese banks and government were not convinced that the automotive industry was one in which a Japanese manufacturer could compete.

Not only did Toyota Motor have this large challenge of becoming the best automotive company in the world; the company structured its approach to this challenge as a series of smaller, yet significant, challenges. Learning how to accomplish just-in-time parts delivery is one example of these smaller challenges. The TPS approach to problem solving, a term coined from a western mind-set, is structured as a series of challenges. Most importantly, the TPS approach seeks to establish shared clarity about the nature of the challenge being addressed.

PROPOSED FOCUS

TRANSFORMATIONAL LEGACY MODEL

While the elements of the McGuffey transformation model, Connection, Challenge, Commitment, and Cognition, are present where successful engagement in lean practices take place there remains no example of where a deliberate application of all four elements of the model have been applied. Even as the Toyota Motor case history employed these elements, the application was developed organically out of a recognition of who these people were and what meaningful challenge they wanted to achieve. Cultural practices of stemming from pre-twentieth century rural Japan reinforced this development.

Based on the research and work with clients, a test of the following program will provide more definitive feedback on the impact of implementing all four elements of the transformation model together. The work should focus on strengthening project teams at the workforce and at each leadership level. The specific methodology follows.

- Provide a seminar to principals and senior managers of all the organizations participating on the project.
- Designate a core engagement group of up to twelve people representing a vertical cross section of the project. This includes representatives from the field crews, crew supervisors, engineering and design offices, project management, project executives, and owner representatives. This cross section ideally includes people that are no more than one person removed from every person working on the project.
- Provide training to the core engagement group in the fundamentals of the transformation model, including a daily cognition process each member commits to practicing, cultivating human connections and fulfilling a purpose.

- Assist the core engagement group in developing and disseminating engagement practices through the project through a network of mentor and peer based coaching. This may include training selected team members in the fundamentals of the transformation model.
- Provide the team with monthly assessments to sharpen their use of the model.

The focus of this research program is not on improving the project schedule and financial performance. There is other research that demonstrates successful implantation of lean processes result in superior project performance. What will be tested is the degree to which project participants, regardless of role, felt more enthusiastic about lean practices toward the end of their participation on the project in comparison to when they first started. This will be measured via surveys taken when they start and finish their work on the project. The surveys will also measure the degree to which people assess they have grown professionally and personally.

CONCLUSION

The elements of the McGuffey legacy transformation model, developed outside both manufacturing and the construction industry, are clearly visible throughout the history of the Toyota Motor Corporation. The elements can also be found to contribute to successful construction project teams as demonstrated in a review of published lean construction research. These elements are Connection, Cognition, Commitment and Challenge. While these elements can be linked to successful teams there remains a need to test a deliberate incorporation of all four elements into the daily practice of a project team. Such a test is proposed as the step in researching effective means for cultivating enthusiasm for lean practices on the part of construction project teams.

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