

The Transformation of Lean: A Social Theory of the Lean Movement

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Abstract	
Purpose	Examine the relationship between the accumulation of knowledge wealth about Lean management by salaried professional staff and social status and status-seeking in the Lean movement.
Methodology	Mixed: exploratory, causal, descriptive, qualitative research.
Findings	Knowledge wealth is a key determinant of social status within the Lean movement. Consumption of knowledge is of greater significance than the actual production of process improvements due largely to the ways in which managers limit the results that can be achieved from the application of Lean principles and practices.
Research Limitations	Research is based on observations in multiple field settings and social media over a period of more than two decades. Future research can include structured interviews and survey data to validate the findings.
Originality or Value	Presents a social theory of the Lean movement from its inception in 1988 through 2020.
Practical Implications	Provides an analytical framework to understand and interpret social status phenomena in the Lean movement. As a social critique of the Lean movement, analysis and findings can be utilized as feedback for making needed improvements.

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Introduction

This paper is a follow-on work to the books *The Triumph of Classical Management Over Lean Management*, *Irrational Institutions*, and *Management Mysterium* (Emiliani, 2018, 2020a, 2020b). *Triumph of Classical Management* answered two important questions:

1. Why do most top leaders resist or reject Lean management?
2. Why do most shop and office floor workers likewise resist or reject Lean management?

Irrational Institutions, and *Management Mysterium* answered the first question from two additional perspectives: rationality and aesthetics and secular spirituality. All three books meticulously examined the “institution of leadership” – common habits of thought and action – and explained why most leaders (>99% est.) greatly prefer traditional classical management over progressive Lean management. This condition has existed since the term “lean production” first came to public attention in the fall of 1988 (Krafcik, 1988). One conclusion from the series of books was that incorrect assumptions about the interests and culture of business leaders, coupled with a lack of desire to understand the current state of leadership, led to remarkably few corporate Lean transformations and the failure to advance Lean management more broadly.

This paper seeks to answer a third important question regarding the staff of salaried professionals (see Notes 1 and 2) who embrace Lean management and work to advance its practice in organizations:

3. Why has Lean management had a large and enduring following among salaried professional staff when most top company leaders have little or no real interest in Lean management, thus impairing the professional staffs’ abilities to practice Lean management and constraining the results that they can achieve?

Logically, salaried professional staff, jointly or severally, should have little or no interest in Lean management if their leaders have no real interest in it or if their effort to apply Lean principles and practices are thwarted by leader’s continued preference for classical management and associated leadership routines. Likewise, a general disinterest in Lean management among shop and office floor workers should modulate interest in Lean among salaried professional staff.

Immense money, time, and effort go into Lean training for salaried professional staff, only for it to be poorly applied or not applied at all. Why bother learning Lean management, or affiliate, advocate, or promote it under such circumstances? What is the real or perceived benefit to salaried professional staff? These and related questions are answered by examining the phenomenon of Lean transformation and associated difficulties which prevent the change-over from classical management to Lean management, which, in turn, resulted in a *transformation of Lean* into something other than that which was intended. In particular, the advancement in social status of salaried professional staff through the accumulation of knowledge wealth.

What is Lean Management?

In this paper, Lean management is understood to be that which has been described by James Womack and Daniel Jones in various books (Womack *et al.*, 1990; Womack and Jones, 1996, 2005) and web sites (LEI, 2020; LEA, 2020; LGN, 2020; PL, 2020). Lean is not taken to be the same as Toyota's management system (TMS), though there are many similarities. Instead, Lean management is understood to be a derivate interpretation of Toyota's production system (TPS) and their overall management system (Table 1). As such, Lean is incomplete in its expression of the purposes, mindsets, and practices of TMS. Yet, it is described sufficiently such that organizations, with thoughtful study and practice and the engagement of senior managers, should be able to achieve significant improvements in business performance and human resource development and capability-building.

Table 1 – Lean Principles and Some Popular Lean Practices

Principles	Practices
1. Specify Value	Value Stream Maps
2. Identify the Value Stream	A3 Reports
3. Flow	Gemba Walks
4. Pull	PDCA Cycle
5. Perfection	Coaching
	Kata
	Huddle Boards

Lean management is the point of analysis in this paper because it is the popular form that commonly exists in business enterprise post-1988 through to today. This includes for-profit business, not-for-profit, government, and non-governmental organizations. Most commonly, Lean is perceived by employees to be a group of tools used to reduce costs and improve productivity and quality. Their larger purpose, such as achievement of Just-in-Time material and information flows, is less recognized or understood, as is its role in developing employees' capability to recognize and quickly solve problems at their root.

In most cases, Lean management has been narrowed in purpose and scope, bureaucratized, and handicapped in numerous ways such that the results achieved are substantially below that which could be achieved. The use of Lean tools, and some elements of Lean thinking, have generally been absorbed into traditional classical management practice (Emiliani, 2018). In such organizations, which clearly constitutes the vast majority, Lean management has lost its identity and is often most recognizable as a type of decoration that produces little or no gain in improvement in teamwork, problem-solving, employee development, or business results.

TMS, being much more difficult to understand and practice, requires orders of magnitude greater learning, engagement, and devotion throughout the enterprise. There are some organizations that, commendably, have developed strong TMS-like management systems, but who refer to it as "Lean." While the higher-fidelity forms of Lean are closer in resemblance to TMS, the vast majority of organizations practice low-fidelity forms of Lean. The many variations of Lean that exist generate confusion as to what Lean management is or is not, and such variation in practice has proven to be

impossible to control. Whatever one may understand Lean management to be, the salaried professional staff has always been its greatest proponent.

Problem Statement

The research question under consideration is:

Why has Lean management had a large and enduring following among salaried professional staff when most top company leaders have little or no real interest in Lean management, thus impairing the professional staffs' abilities to practice Lean management and constraining the results that they can achieve?

How can this unusual phenomenon be explained? Six hypotheses are presented and briefly examined to determine their validity and relative importance in relation to the problem statement.

Hypothesis 1: The salaried professional staff is attracted to Lean management because of its ideals and the promise for better a future state.

Lean management indeed promises much across many important dimensions and its thoughtful practice can produce brilliant results. There is ample empirical evidence that proves this point, coming from organizations that have transformed from classical management to Lean management (Emiliani *et al.*, 2007; Kenney, 2010). This is surely part of Lean's attraction, which easily crosses social, political, and racial lines. While interest in Lean was predominantly white males for more than two decades, it has become more diverse in the last ten years. Hypothesis 1 is judged to be significant though not a primary explanation for the above problem statement.

Hypothesis 2: The salaried professional staff is engaged with Lean management in the hope that Lean will one day become widely accepted by business leaders, and they will thus be ready to contribute when such a day arrives.

Preparedness for when such a day arrives is admirable. The investment of time and energy in learning Lean management is significant and could one day pay off. However, company leaders have, for centuries, sought to invest in labor-saving machinery – which is their preferred method for reducing costs and improving productivity and quality, not Lean. Nothing has yet successfully altered that view. Business leaders will continue along this traditional path, utilizing whatever tools are, or will become, available to workers to aid in the use of machine technologies. Hypothesis 2 is judged to be a secondary or lesser explanation for the above problem statement.

Hypothesis 3: The salaried professional staff mobilized in response to corporate initiatives wherein top leaders mandated Lean management to be the corporate operating system.

Company leaders, most of whom know little about Lean management, incorrectly assume it can be mandated into existence, just as any initiative can be mandated into existence under the aegis of classical management and in the honorific tradition of top-down leadership. Knowing where one's paycheck comes from, and its importance to a life well-lived, salaried professional staff dutifully comply with such a mandate. However, their allegiance to Lean has been long-lived despite leaders' perpetual misunderstandings, and perhaps their own misunderstandings of Lean as well. This suggests the validity of Hypothesis 1 and Hypothesis 2 as significant factors in the long-lived nature of the salaried professional staff's interest in Lean management. Despite this, Hypothesis 3 is judged to be a secondary or lesser explanation for the above problem statement.

Hypothesis 4: Lean management provides the salaried professional staff with a means for providing greater value to their employer and to remain employed.

If leaders allow salaried professional staff to apply Lean principles and practices in ways that achieve business results, then it may be true that possessing such knowledge does provide greater value to one's employer and helps ensure continued employment. However, leaders often delimit what salaried professional staff can achieve by applying Lean principles and practices, preferring instead that its practice be used to optimize existing classical management. In classical management, regular full-time employees are understood to be expendable at any time (the degree of which varies from country to country). Disrespect for people is an integral feature in classical management, not a bug. Therefore, Hypothesis 4 is judged to be a tertiary or lesser explanation for the above problem statement.

Hypothesis 5: Lean management provides the salaried professional staff with a means for elevating one's rank and increasing one's salary.

It is true that people are promoted for doing good work in the application of Lean principles and practices – especially in companies who leaders are committed to transforming the management system from classical to Lean. However, most top company leaders do not seek Lean transformation. Instead, they simply want lower-level people to become more adept at problem-solving using Lean tools in a classical management environment. Therefore, advancement opportunities are usually limited to lower- or mid-levels, with promotion to higher levels awarded to those who better reflect the understanding and practice of classical management. Therefore, Hypothesis 5 is judged to be a tertiary or lesser explanation for the above problem statement.

Hypothesis 6: Lean management has transformed from a technical occupation to a social avocation.

The early days of Lean management (circa 1988-2000, then known as “lean production”) were marked primarily by gaining the technical skills necessary to improve material and information flow, and to a lesser extent the related teamwork and, depending upon the source of technical training, the human relation skills essential to achieving the desired business outcomes. The industrial application of Lean was mainly directed towards reducing costs and improving productivity and quality. Post-2000, the

understanding and meaning of Lean became diluted and highly confused as it diffused across companies and industries, accompanied by the rapid growth of Lean consulting and training organizations offering whatever service potential clients would buy. Despite this, there remains a strong affiliation with Lean management and its many variations among salaried professional staff. Given the analysis presented for Hypotheses 3, 4, and 5, Hypothesis 6 rings truest, particularly considering Hypotheses 1 and 2. Lean has been transformed over time from a technical discipline into a social avocation with a weakened technical focus. This appears to be the result of limitations imposed by successive company leaders and Lean having been largely subsumed into classical management in most organizations.

Interest in Lean management and the Lean movement have always been strongly social-affiliative. It attracts like-minded people across a spectrum of work and educational backgrounds, though historically limited in diversity. Lean, being of great practical significance, intellectually rich, and emotionally satisfying (or frustrating), commands deep and abiding interest among its followers. They are hungry for Lean knowledge and have an insatiable appetite for more. As the saying goes, “the more you learn, the more you realize how much you don’t know” – unlike classical management in which learning was concluded long ago (Emiliani, 2018).

The following section presents a social theory of the Lean movement. It begins the process of understanding why followers of the Lean movement are so numerous and enduring despite the difficulties they face and illuminates important ways in which satisfaction is found.

Social Status and Lean

Status in society is achieved by having made some noteworthy accomplishment in business, politics, sports, the arts, or other field of human endeavor. Status is conferred and legitimized when the accomplishment becomes widely recognized due to its impact on society, recognition by influencers, or through sustained dissemination across the various forms of media. Success in business, especially, generates financial wealth for its owners. Financial wealth is automatically accepted as evidence of strong personal character and virtue gained through industriousness. Having great wealth is the most conspicuous form of social status because it allows one to display their high standing in society through the consumption of goods and services that are far in excess of actual needs (Veblen, 1899). However, not everyone who attains high social standing is wealthy. Social status can also be gained by possessing knowledge, such as scientists who are prominent in their field of study but receive nothing more than remuneration from their employer. They too are regarded as having strong personal character and virtue gained through industriousness.

Whether one is wealthy or not, the desire for higher social standing compels people to emulate their betters. If the marker of social status is money, then everyday people will buy expensive clothes or cars or houses to emulate their betters and display their purchases, even though they cannot truly afford to buy such things. If, on the other hand, the marker of social status is knowledge, then people will expend resources to obtain knowledge to elevate their social status within a community where

knowledge is important. The Lean movement is one such community where knowledge, especially individual knowledge, is judged to be of great importance – to a much greater extent than the amount of financial wealth one may have obtained as a result of Lean (see Notes 3 and 4). The display of knowledge is the primary determinant of one’s social status in Lean-world. Therefore, knowledge wealth is the more highly accredited form of wealth, and thus stands above financial wealth.

In the early days (circa 1988-2000), Lean was treated as something special, a form of private property, owned and controlled, shared with others in measured ways at measured times, for a price which reflected marketplace demand. Lean was financial wealth expropriated from Toyota Motor Corporation, though not inconsistent with their willingness to share aspects of their progressive management system (Ohno, 1988; Liker, 2004), for the benefit of all. Over time, more and more people got into the business of Lean, for better or worse. This created an explosion of Lean knowledge that was no longer controllable and could no longer be vetted by centralized sources. The Internet provided the platform for widespread sharing Lean knowledge, often at no cost. Anyone with a computer and web browser was now able to gain Lean knowledge that they could then apply on-the-job, experience the outcomes, and make appropriate changes to yield better results. Information about Lean management could now be had for high prices, low prices, and free.

People have been drawn to Lean management for manifold reasons, singly or in combination. Over time a culture of Lean evolved that prized many characteristics including:

- Process Improvement
- Elimination of Waste
- Productivity
- Cost Reduction
- Quality Improvement
- Lead-Time Reduction
- On-Time Delivery
- Material and Information Flow
- Workforce Stability
- Responsiveness
- Learning
- Teamwork
- Respect for Workers
- Purpose
- A Better Life at Work
- A Better World

Lean management seemed to attract people who liked the idea of eliminating problems from work so that the work is more reliable and predictable, and thus eliminating the chaos and repetitive problems that are inherent to classical management. The initial focus on manufacturing operations was enlarged to include service operations, followed in time by the general case of any organization and every process in every department.

The social affiliation and cultural values of the new progressive Lean management were seen, and continue to be seen, as raising one’s viewpoint and thinking, and hence one’s status, relative to the outdated traditions of classical management. This is opposite the social affiliation and cultural values of classical management that have long been in existence, and where business leaders remain stuck on

certain required aesthetics (Emiliani, 2020a) and antiquated atavistic and animistic preconceptions (Emiliani, 2020b).

There is a clear desire to enhancing one's status, and likely personal prestige as well, by knowing more about Lean management than others. However, doing useful things with that knowledge, while certainly the treasured ideal, is necessarily lower in importance because of the difficulties one encounters in trying to apply knowledge of Lean on-the-job. Restrictions by company leaders as to the nature and scope of improvement, often accompanied by bureaucratic management controls and approvals, circumscribe what is achievable. Leaders raised with classical management limit achievements to only those which support the status quo of classical management and consequently serve their own interests. Additionally, one who is aggressive at applying their Lean knowledge can run afoul of their peers and experience resentment and become ostracized – even in those organizations where senior managers professes to be in full support of Lean management.

Therefore, possessing knowledge of Lean becomes the thing of greater value for most people, a type of trophy to display in the means that are possible, within a company such as during a meeting or in a newsletter, or externally such as via social media. Collections of books and a steady diet of videos, podcasts, blogs, and other low- or no-cost media to obtain Lean knowledge is symbolic of possessing a higher learning. As are group photos posted on social media to commemorate learning (e.g. Japan study tours) or having made minor improvements in the workplace. In these forms of status seeking and emulation, value lies in the consumption of knowledge, to know what others know, rather than in the production of knowledge. Nearly 50 years after the world became aware of Toyota's production system, little new knowledge has emerged from outside of Toyota pertaining to the practice of this form of progressive management. Copying others, while intensely derided by the Lean cognoscenti, is actually *de rigueur* because original thinking is scarce. It is only the simple question of whom to copy.

Nevertheless, personal knowledge of Lean management, and disdain for classical management, generates pride and prestige, and confers respect and valor to the converted. In this way, Lean is a status-enhancing object more than it is a work improvement methodology. It does things for people that they otherwise cannot do for themselves, though higher standing does not carry forward into the world of classical management as many hoped it would. This is the result of mismatched preconceptions between Lean practitioners and top company leaders (Emiliani, 2018, 2020a, 2020b).

Possessing Lean knowledge is honorific in Lean culture. This helps to drive the accumulation of credentials such as certifications, training courses, conference-going, CEUs (continuing education units), and other forms of knowledge wealth (see Note 5). Myriad Lean and Lean-related certification programs confer to participants the use of various symbols upon completion. These symbols of professional achievement are recognized as having intrinsic value as well as value in the job market. Status and respectability are gained via certificates of completion (name on a diploma) and the placement of letters after one's name (see Note 6). The accumulation of symbols of knowledge is a ubiquitous cultural trait that connotes distinctions of social rank and worth that others seek to emulate.

Whether knowledge wealth is put to any practical or theoretical use is of lesser importance. What matters most is having obtained it and the ability to display it.

The consequence of focusing on the social status function of Lean management is the now-common perception that Lean offers more promise than it can deliver or has delivered. Indeed, there are precious few Lean transformations when one considers the total number of large, mid-size, and small businesses in any one country or globally. Yet, there are plentiful examples of wonderful improvements that make work better or easier. This reflects a shift in interest among both business leaders and Lean practitioners, begun some two decades ago, away from Lean transformation of the whole organization to the more basic activity of process improvement, either one-time or periodically, though rarely continuously. The improvements resulting from knowledge wealth, while useful, appear in most cases to have little impact on company financial and non-financial results. As a result, business leaders continue to rely on the classical management playbook for increasing financial (enterprise) wealth. This outcome is consistent with what one would expect given the limitations senior managers place on the outcomes that can be achieved using Lean principles and practices.

Fundamentally, producing a product or service relies on processes and procedure, and is mostly deterministic. In contrast, making money is mostly stochastic – random in its opportunism and relying heavily of expediency (classical management playbook). Top leaders are not, and perhaps unable or unwilling to be, the type of systems thinkers that Lean management requires. Executives see pieces on a chessboard to move around, expand, or eliminate as market conditions change, to realize the greatest gains in financial wealth short- or long-term. Lean people see the inner workings of each piece on the chessboard and seek to improve them individually or in some larger coordinated way to produce the desired output according to specifications and marketplace demand. It is akin to the difference between an epidemiologist, who looks at the big picture (patterns of disease in a population), and a physician who is focused on ensuring the system (body) has no problems (disease) and stays healthy. In the common understanding, the purpose of the business leader and the purpose of the process improver are seen as being different, each beholden to their own sets of interests, values, and cultural proclivities. The result is a large gap between the “institution of leadership” and the “institution of Lean” – one that has proven to be extremely difficult to close. When it does close, it is more by luck than by foresight.

The institution of Lean comprises the common habits of thought and action characteristic of those who affiliate with Lean management. The institution of Lean came into being via the business of Lean, which metes out the correct ways of thinking and the correct things to do (see Note 7). The Lean community is dominated by the ideas and values of a select few people and organizations. They represent the top of the Lean social hierarchy and whose power and influence is substantial such that their implied and explicit directives are eagerly anticipated and ravenously consumed. Giving consent affirms one’s reputation and social status in the Lean community, while denying consent results in spontaneous rejection. While the fundamental intent is to train and educate people in practical problem-solving, the result is more that of an appearance of understanding. A movement professing to teach people how to think for themselves inadvertently creates its own unthinking masses, so taken

with the institution of Lean that they have difficulty recognizing problems with the ideology, how it is promulgated, for what purpose, and for whose benefit. The institution of Lean, dominated by the business of Lean, has effectively contaminated people's ability to think for themselves. When Lean functions more as an aspirational reflection of one's self, it cannot unleash people's intellect to practical effect. Self-actualization is diminished or denied to many, thereby reducing the amount and quality of useful improvements.

The superior rightness of Lean breeds complacency, wherein Lean's future is now defined by its less than successful past. Overall, the institution of Lean has failed to become the collective progressive force for change in management and leadership thinking and practice. But, from the start, the task of making progress was challenged by a great and diverse range of formidable obstacles both unseen and ignored (Emiliani, 2018, 2020a, 2020b). The progressive model for professional thinking and conduct becomes its own conservative force due to a loss of objectivity and unwillingness to comprehend the actual situation. Cultural obedience and social acquiescence retard the thinking and innovation necessary to move the institution of Lean beyond knowledge wealth and social status seeking. But leaders in any situation do as they almost always do, which is to ignore or obscure the facts, whether intended or not, to retain what has been gained in the hope that it will never be lost.

Summary

This paper sought to answer the question of why Lean management remains popular with the staff of salaried professionals when most top company leaders have little or no real interest in Lean management. It identified a *transformation of Lean* that occurred over time, from a technical discipline into a social avocation with a weakened technical focus. Gaining social status through the accumulation of knowledge wealth became the dominant, though not sole, point of interest among the salaried professional staff. Included with this is the accumulation of symbols of knowledge that distinguish in social rank and worth. Causal relationships were explored to explain the transformation of Lean, and it was found to be the result of limitations in the practice of Lean management imposed by successive generations of company leaders, including the widespread sublimation of Lean management into the practice of classical management. The consequence of this include muddled understanding of the purpose and intent of Lean management; the eager consumption of Lean knowledge, know-how, and wisdom; a low rate of production of process improvements; and the production of improvements that have little or no impact on the business or its customers. These findings illuminate numerous opportunities for improving the business of Lean and the practice of Lean management in organizations.

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Notes

1. The term “salaried professional staff” means the sub-group of professional staff whose role it is, by job type or otherwise, to be engaged in the daily application of Lean principles and practices. It does not represent the entirety of salaried professional staff across all functions or disciplines in a business. The term identifies the typical locus of Lean activity in organizations that have interest in the practical application of Lean management to improve business processes.
2. The author does not exclude himself from this social critique. It pertains to all affiliated with Lean, past and present, prominent or invisible.
3. Personal wealth can come from either the application of Lean management in a business (see Emiliani *et al.*, 2007) or from the business of Lean; e.g. training and consulting services, book publishing, speaking, etc.
4. Lean aficionados are indifferent to someone who has gained wealth from Lean management, either through its application in a company or through the business of Lean. What matters most is that the person is a reliable source for high quality knowledge, know-how, and wisdom about Lean management and associated leadership routines. Knowledge possessed individually, especially by former Toyota employees (e.g. sensei) or business leaders who have successfully led a Lean transformation, is held in high esteem – except sometimes when it is not. Many of the world’s foremost practitioners who possess substantial (decades-long) hands-on record of significant accomplishment in real-world business settings are barely known, if not dismissed, while others who are immeasurably under-accomplished garner large audiences. Consequently, certain people have higher social status compared to others, replete with the expected mystique and devotion. This provides further evidence that possessing Lean knowledge, or the appearance of possessing it, is the thing that is held in the highest regard. In comparison, the accumulated stock of knowledge, know-how, and wisdom of the Lean community is less valued. This may be the result of the continued absence of a common definition of Lean management, alterations and mutations of Lean principles and practices that have occurred over time, and dismemberment of the Lean management system into its component parts to aid acceptance.
5. Lean is popularly said to be a “journey.” The term is more apt for describing the accumulation of knowledge wealth. However, affecting the transformation from classical management to Lean management is much greater challenge, perhaps more accurately described as “Lean mountain.”
6. This could be the enduring appeal of Lean Six Sigma. It offers pathways for status-laden credentials that Lean management alone does not offer.
7. This includes Lean tools and methods such as value stream maps, PDCA, gemba walks, A3 reports, leader standard work, coaching, kata, huddle boards, etc.

References

- Emiliani, B., Stec, D., Grasso, L., and Stodder, J. (2007), *Better Thinking, Better Results: Case Study and Analysis of an Enterprise-Wide Lean Transformation*, Second Edition, The CLBM, LLC, Wethersfield, Conn.
- Emiliani, B. (2018), *The Triumph of Classical Management Over Lean Management: How Tradition Prevails and What to Do About It*, Cubic, LLC, South Kingstown, Rhode Island
- Emiliani, B. (2020a), *Irrational Institutions: Business, Its Leaders, and The Lean Movement*, Cubic, LLC, South Kingstown, Rhode Island
- Emiliani, B. (2020b), *Management Mysterium: The Quest for Progress*, Cubic, LLC, South Kingstown, Rhode Island
- Kenney, C. (2010), *Transforming Health Care: Virginia Mason Medical Center's Pursuit of the Perfect Patient Experience*, CRC Press, Boca Raton, Florida
- Krafcik, J.F. (1988), "Triumph of the Lean Production System," *Sloan Management Review*, Vol. 30, No. 1, pp. 41-52
- LEA (2020), The Lean Enterprise Academy, <http://www.leanuk.org>
- LEI (2020), Lean Enterprise Institute, <https://www.lean.org>
- LGN (2020), Lean Global Network, <http://leanglobal.org>
- Liker, J. (2004), *The Toyota Way*, McGraw-Hill, New York, NY
- Ohno, T. (1988), *Toyota Production System – Beyond Large-Scale Production*, Productivity Press, Portland, OR
- PL (2020), Planet Lean: The Lean Global Network Journal, <https://planet-lean.com>
- Veblen, T. (1899), *The Theory of the Leisure Class: An Economic Study of Institutions*, Macmillan Co., New York, NY
- Womack, J., Jones, D., and Roos, D. (1990), *The Machine that Changed the World*, Rawson Associates, New York, NY
- Womack, J. and Jones, D. (1996), *Lean Thinking: Banish Waste and Create Wealth in Your Corporation: The Story of Lean Production*, Simon & Schuster, New York, NY
- Womack, J. and Jones, D. (2005), *Lean Solutions: How Companies and Customers Can Create Value and Wealth Together*, Free Press, New York, NY