Robert R. Locke*

Economics and the Shop Floor: Reflections of an Octogenarian

In 2000, the Post-Autistic Economics Newsletter began covering the resistance of French students against the "uncontrolled use of mathematics" in their discipline. The students spoke of a "need to liberate economics from its autistic obsession with formal models that have no obvious empirical reference." (Post-Autistic Economics Newsletter, issue 3, 27 Nov 2000) In an earlier newsletter they had elaborated, too often the lectures leave no place for reflection. Out of all the approaches to economic questions that exist, generally only one is presented to us. This approach is supposed to explain everything by means of a purely axiomatic process, as if this were THE economic truth. We do not accept this dogmatism. We want a pluralism of approaches, adapted to the complexity of the objects and to the uncertainty surrounding most of the big questions in economics (unemployment, inequalities, the place of financial markets, the advantages and disadvantages of free-trade, globalization, economic development, etc.) (Post-Autistic Economics Newsletter, issue 2, 3 Oct 2000). The students did not object to economics being a science; they just wanted to make it empirically relevant. This search for an empirically relevant science of economics has been a hard slog, for if the effort to show the autistic nature of orthodox nomothetic neoclassical economics has been relatively easy, the search for a praxis relevant alternative has not. I suggest that in looking for empirical relevancy primarily through expansion into the social sciences, post-autistic economists have been looking in the wrong place. For empirical relevance they need to focus on the relationship between economics and the shop floor.

The Problem

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Strategic Vision and the Shop Floor

Mike Rother (2010) points at a very significant example of how change in strategic vision affected the shop floor—when Alfred P. Sloan at General Motors announced: "We are not in the business of making cars. We are in the business of making money." The new vision spawned a financial revolution in top corporate management, which led to the elaboration of financial reporting techniques ((2010) Rother. *Toyota Kata: Managing People for Improvement, Adaptiveness, and Superior Results*, pp. 65-69). "By the 1950s [the strategic vision and the management methods it engendered]," he continued, "had become general practice at US corporations and at companies around the world. Today [2010] it is so pervasive that it is essentially invisible. It is simply how things are done" (p. 64).

The pervasiveness of the new strategic vision even made business history respectable among historians. Alfred D. Chandler, Jr. in several books ((1962) *Strategy and Structure*; (1977) Pulitzer Prize winning *The Visible Hand: The Managerial Revolution in American Business*; and (1990) *Scale and Scope: The Dynamics of Industrial Capitalism*) celebrated the strategy of turning corporate governance into a money mill. The reputation of the Harvard Business School drew students nationally and internationally into Chandler's seminars from whence his views and his school of business historians spread. Sloan's new strategic vision of the 1920s not only shaped the visible hand of corporate governance, but throughout the third quarter of the last century, it also shaped the work of business historians to which H. Thomas Johnson and I belong.

In a career change, Johnson described in a prize-winning book with Robert S. Kaplan how the financialization strategy of US corporate governance isolated it from the shop floor ((1987) *Relevance Lost: The Rise and Fall of Management Accounting*). He expanded his views in a 1992 book (*Relevance Regained: From Top-Down Con-*

trol to Bottom-Up Empowerment) and then explained them further in (2000) *Profits Beyond Measure: Extraordinary Results through Attention to Work and People*.

He observed, in this last work, co-authored with Anders Bröms,

> Successful [US] managers believed they could make decisions without knowing the company's products, technologies, or customers. They had only to understand the intricacies of financial reporting. … [B]y the 1970s managers came primarily from the ranks of accountants and controllers, rather than from the ranks of engineers, designers, and marketers. [This new managerial class] moved frequently among companies without regard to the industry or markets they served. … A synergistic relationship developed between the management accounting taught in MBA programs and the practices emanating from corporate controllers' offices, imparting to management accounting a life of its own and shaping the way managers ran businesses. (Johnson & Bröms, 2000, p. 57).

Johnson despised these lifeless pyramidal structures, managed by computer-oriented production control experts, imposed on shop floor work processes.

> At first the abstract information compiled and transmitted by these computer systems merely supplemented the perspectives of managers who were already familiar with concrete details of the operations they managed, no matter how complicated and confused those operations became. Such individuals, prevalent in top management ranks before 1970, had a clear sense of the difference between "the map" created by abstract computer calculations and "the territory" that people inhabited in the workplace. Increasingly after 1970, however, managers lacking in shop floor experience or in engineering training, often trained in graduate business schools, came to dominate American and European manufacturing establishments. In their hands the "map was the territory." In other words, they considered reality to be the abstract quantitative models, the management accounting reports, and the computer scheduling algorithms … (Johnson & Bröms, 2000, p. 23)

If change in corporate governance strategy so transformed the top's relationship with the shop floor, the general financialization of the US economy in the last quarter of the century carried the alienation further. Sloan's corporate headquarters viewed a business as a vehicle for maximizing "returns on investment … based on the value created by productive enterprise." The general financialization of the US global economy views businesses "as assets to be bought and sold for maximizing profits through financial strategies" (R. Ball & E. Appelbaum, 2013, "The Impact of Financialization on Management and Employment Outcomes," p. 91).

Investors are familiar with the institutions that the new strategy created to maximize profits, the proliferation of stock markets, financial investment firms, hedge funds, etc. that resulted in an extraordinary volatility in firm turnovers. R.N. Foster and S. Kaplan (2001) in *Creative Destruction, Why Companies that are Built to Last Underperform in the Market and How to Successfully Transform Them,* proclaimed that in the late twentieth century corporations lived in an era of "discontinuity." They observed that if Forbes' list of the 100 largest US corporations in 1987 is compared to Forbes' first list from 1917, only 18 of the original 100 firms appeared on the list 60 years later; 61 of the firms on the 1917 list no longer even existed. Scanning the S&P 500 for the period 1957–1998, they reported that the pace of turnover at the top was accelerating so quickly that by 2010 the average life span of an S&P listed firm would be ten years. By the year 2020, J. Edwards and K. Fisher had predicted

in 1994 "no more than one third of today's major corporations" on the S&P list "will have survived in an economically important way" (*Banks, Finance, and Investment in Germany*, p. 5). However, this was not undesirable because the finance capitalists believe stock markets cull out by stock price underperforming firms from the international corporate pool.

On the other hand, institutional investors, who now dominated Wall Street, were not praised when making decisions for having acted from a knowledge of the shop floor—on the contrary. Lawrence Mitchell, in (2008) *The Speculative Economy: How Finance Triumphed Over Industry*, describes how one popular investment decision technique, the Capital and Pricing Model (CAPM) invented by pioneering finance mathematician and Noble Prize economist Harry Markowitz, ignores the shop floor.

[T]he product of a regression analysis called *beta*, CAPM allows investors to build the kinds of potentially lower-risk, higher-return portfolios...described by Markowitz, based solely upon a narrow range of information about the stock. The business itself matters little, if at all. All an investor needs is *beta*. No balance sheet, no profit and loss statement, no cash flow information, no management analysis of its performance and plans, no sense of corporate direction, no knowledge of what is on its research and development pipeline, no need even to know what products the corporation makes or what services it provides. Just *beta*. The stock is virtually independent of the corporation that issued it. CAPM has been adopted and is daily used by countless stock analysts and institutional money managers. Almost every American who invests in the market through mutual funds or other institutional media has invested on the basis of CAPM (Mitchell, YEAR?, p. 275).

The Emergence of an Alternative Strategic Vision on the Sustainability of Firms, Economic Communities, and Nations, and How it Affects Relations with the Shop Floor

First, a short excursion into almost forgotten history.

The smug assurance of US financialized corporate capitalists came apart, if briefly, during the Japanese industrial challenge, which was often called a "shock" because it happened rather suddenly. The "shock" led to a wide conviction that the Japanese produced the most successful economy. Evidence to support the contention piled up quickly in the early 1980s. W. Mark Fruin in (1992) *The Japanese Enterprise System: Competitive Strategies and Cooperative Structure*, pointed out that the "[m]ost astonishing aspect of Japan's post-war economic recovery has been a surprisingly rapid penetration of the world oligarchy in such capital-intensive industries as automobiles and in related industries of steel glass and tires" (Fruin, 1992, p. 294). The automobile story could be quickly told. The number of American workers in that industry dropped from 802,500 in December 1978 to 487,700 in January 1983. The steel story was even worse. According to a survey completed by *Business Week*,

18 major steel companies recorded a combined loss in 1982 of $3.2 billion. Keitaro Hasegawa wrote in (1985) *Japanese Style Management: An Insider's Analysis of Corporate Success*, that American steel was an "industry in crisis" (p. 251). Half of the routine jobs vanished between 1977 and 1988 (from 489,000 to 260,000). To these horror stories could be added others about American failures in many other mass-production industries—transistor radios, cameras, binoculars, radios, sewing machines, color television sets, etc. as well as in glass and tire manufacturing.

The Japan threat was especially painful in machine tools, deemed an essential industry. Max Holland in (1989) *When The Machine Stopped: A Cautionary Tale from Industrial America* wrote that "overall, perhaps twenty-five percent of the industry evaporated before 1986" (p. 274). Another was the high-tech electronic industry, so vital to defense and future industrial leadership. By 1991, Herbert A. Henzler and Lothar Späth figured, Japanese manufacturers would produce 41 percent of the world's integrated circuits and 29 percent of the computer hardware, as opposed to the US's 26 percent of integrated circuits and 30 percent of the hardware. Whereas the US had provided half of the world's industrial output in 1950, by the mid-1980s the number was 21 percent as compared to Japan's 19 percent. Since the trends were all unfavorable, Japanese superiority long-term seemed assured.

The threat to industries extended to Europe. Volkswagen's export to North America halved between 1965–1975 (down because the Japanese were capturing America's small car market). During the 1980s the European Economic Community's share of exports to the US fell from ten to four percent. Germany exported more to tiny Austria (eight million inhabitants) than it did to all of East Asia. Indeed, Germany's exports to non-European countries during the decade did not grow. Europe, deprived of world market share, found itself falling back on European markets that they protected. In Germany there was a sea change from optimism to pessimism, perhaps expressed best in the title of Henzler and Späth's popular book (1993) *Sind die Deutschen noch zu retten?* ("Can the Germans still be saved?").

This challenge to American stable industries and firms evoked the lean production and Toyota *kata* movements, which sought to promote a management that would advance the sustainability of threatened firms. James Womack, Daniel T. Jones, and Daniel Roos's (1990) *The Machine That Changed the World: The Story of Lean Production* gained perhaps the widest attention, but it was followed by numerous works, including H. Thomas Johnson's (1992) *Relevance Regained,* and his co-authored book (2000) *Profits Beyond Measure,* Mike Rother's book with John Shook (1998) *Learning to See: Value Steam Mapping and the Elimination of Mudda,* and Rother's book, *Toyota Kata.* But it was not just about books; the Japanese challenge spawned a broad movement to implement sustainability management in the work world of America and Europe.

University of California physicist Fritjof Capra, in (1982) *The Turning Point: Science, Society, and the Rising Culture*, a book H. Thomas Johnson admires and recom-

mends, described the management organizational culture in which sustainability thrives:

> Most living systems exhibit multileveled patterns of organizations characterized by many intricate and nonlinear pathways along which signals of information and transaction propagate between all levels, ascending as well as descending. That is why I have turned the pyramid around and transformed it into a tree, a more appropriate symbol for the ecological nature of stratification in living systems. As a real tree takes its nourishment through both its roots and its leaves, so the power in a systems tree flows in both directions, with neither end dominating the other and all levels interacting in interdependent harmony to support the functioning of the whole (pp. 281-282).

This is essential to process management reality.

Others, realizing sustainable management emphasized human relations, not methods and techniques, pointed out that the extra firm educational centerpiece in Japan, delivered in grades K through 9, prepared people for regimes of sustainability.

Educational specialists observe that, despite changes in education brought on after World War II through Western emulation, the cultivation of group consciousness remained the focus in these grades. William K. Cummings, in (1980) *Education and Equality in Japan*, noted that Japanese teachers spend an inordinate amount of time at the beginning of the school year just establishing order in the classroom so that learning subsequently can take place. "Classroom order is developed by having students cooperate in groups that prepare contributions for the rest of the class" (p. 150).

Classes break into groups, with teachers sitting by rather unobtrusively. Bright students work with slow learners whose performance they help raise to the group pace. Teachers and administrators do not discipline individuals, by, say, sending a pupil to the office, but let the group to which the problem pupil belongs decide and administer "punishment." Assertive discipline is "antithetical" to the Japanese style of pupil management. Japanese teachers at the preschool level defer discipline authority to the group. Small work groups are held collectively responsible for homework assignments so that if a group member does not do this work the others receive demerits. Groups are assigned tasks, sometimes too difficult to do, just to see how well they can cope with them—they are stretched. (Joseph Adams (1995) "The British Disease" and the "Japanization" of British Industry: Conjuncture or Continuity in World History," Master's thesis, University of Hawaii at Manoa (p. 69).)

Within the system moral education is taught by experience as well as precept. "Regardless of pupil preferences," Adams (an American who taught in Japan's system in the 1990s) stated, "they are supposed to do the work their group is assigned to do, not out of preference but out of an understanding of their 'duty' and the importance of the job." Moral education is an important aspect of group work tasks, including food service and clean-up. Cummings (1980) comments:

> This lunch routine contains several moral messages: no work, not even the dirty job of cleaning, is too low for a pupil; all should share equally in the common tasks; the maintenance of the school is everyone's responsibility. To underline these messages, on certain days each year the entire school, from the youngest student to the principal put on their dirty clothes and spend a couple of hours in a comprehensive cleaning of the school building and grounds." (p. 117)

Also see, Joseph J. Tobin, David Y. H. Yu, and Dana H. Davidson (1989) *Preschool in Three Cultures, Japan, China, and the United States*; and chapter 3 "Japanese Self-Absorption" in Locke (1996) *Collapse of The American Management Mystique*.

Since process education stresses the procedure through which results are obtained, not the results, K-9 education is ideal psychological preparation for people being incorporated into a *kata*—"a routine," as Rother (2010) describes it, "or method that is practiced and used time and again … until it becomes second nature" (p. 165).

People in firms involved in continuous improvement process reform, in order to sustain the vitality of a firm, cannot implement change without a clear and accurate knowledge of what is going on in firm process. That knowledge could not be provided by the management taught and practiced in US firms. But it could in the Toyota *kata*, which helps explain why people advocating its adoption always take a swipe at US management systems. Johnson did, by juxtaposing a list of phrases that pinpoint the behavioral traits suited to Big Three automobile management-driven manufacturing contrasted to those of the Toyota collaborative process production system (Johnson & Bröms, 2000, pp. 186-187):

Big Three, Management by Results	TPS, Management by Means
The "I" stands alone	Relationships are reality
Control the result	Nurture relationships
Follow finance-driven rules	Master life-oriented practices
Manipulate output to control costs	Provide output as needed on time
Increase speed of work	Change how work is done
Specialize and decouple processes	Enhance continuous flow
An individual is the cause: blame	Mutual interaction is the cause: reflect

In the foreword to *Toyota Kata*, Johnson wrote "Mike Rother penetrates Toyota's management methods to a depth never before reached. …[H]e offers a set of new ideas and practices that enables any organization, in any business, to do what it takes to match Toyota's performance" (Rother, 2010, p. vii). He added: "In my opinion, the greatest change [his book] can bring to the non-Toyota business world is to replace traditional financial-results driven thinking with an understanding that outstanding financial results and long-term organization survival follow best from continuous and robust process improvement and adaptation." (p. ix) Unlike the data processing procedures of finance management that blind those at the top's situational awareness of what is happening on the shop floor, the procedures of the improvement *kata* are not only based on what is happening on the shop floor, but integral to it, since they constantly monitor human behavior within, in order to reveal

process shortcomings, thereby continually correcting them in order to promote sustained firm competitiveness.

In the book, Rother (2010) noted that

> Toyota's way, as it is sometimes called, is characterized less by its tools or principles than by sets of procedural sequences – thinking and behavior patterns – that when repeated over and over in daily work lead to the desired outcome. These patterns are the context within which Toyota's tools and principle are developed and function. (p. 15)

Rother (2010) also affirmed that the Toyota improvement *kata*, described in part III of his book, is "a scientific approach, and thus universal in nature and applicable in many organizations and to many different situations. I have utilized it successfully many times. It works, and I have no hesitation in recommending it" (p. 227).

Johnson was a professor of accounting who retired as a professor of sustainable management. Others in the sustainable management movement were Japanologists, and social scientists, manufacturers, members of associations, like Deming Societies, the Association for Manufacturing Excellence, founded in 1985, the Philadelphia Area Council for Excellence, the Growth Opportunity of Alliances of Greater Lawrence (Massachusetts), and a list of others that brought together businessmen, union leaders, and civic dignitaries concerned about the de-industrialization of their regions. Those directly involved in transferring lean production processes and the Toyota *kata* to client firms were mostly engineers like Mike Rother and Jeffrey K. Liker in Industrial and Operations Engineering at the University of Michigan, for to work in the implementation process meant that the reformers had to be fully conversant with shop floor environments. [Liker et al (1999). *Remade in America: Transplanting and Transforming Japanese Management Systems*; Liker (2004) *The Toyota Way*]

None/few were economists in universities and business schools trying to mine the vein of sustainable management to make their studies more empirically relevant. In particular, participants in the post-autistic/real-world movement paid scant attention to the sustainability movement, either in their writings (although the editor of the *Post-Autistic/Real-World Economics Review* has generously published my papers that touch on the subject, which makes me the exception), or in their actual work to implement sustainable shop floor processes. But such an involvement would have been unexpected.

When neoclassical economists and decision theorists reformed US business school curricula post-World War II in order to introduce a scientific paradigm into the schools, they also, perhaps because of the success of their reforms, subsequently turned business schools away from investigating Total Quality Management, thereby preventing business school students in standard MBA courses from learning about continuous improvement sustainable management. (See, on the introduction of the scientific paradigm in business schools, Khurana (2007) *From Higher Aims to*

Hired Hands, 195–290; on the role of operations research, Locke (1989) *Management and Higher Education Since 1940*, pp. 1–55.)

Robert S. Kaplan, co-author with Johnson of *Relevance Lost* (1987), supports this conclusion. After reviewing articles published in leading operations management journals and examining research and teaching in top business schools, he found that only one to two percent of the schools had "truly been affected, as of early 1991, by the Total Quality Management revolution that had been creating radical change in many U.S. and worldwide businesses." (Kaplan, 1991, "Quality in Business School Education and Research," p. 1). He concluded that "American business school research and teaching contributed almost nothing to the most significant development in the business world over the past half century – the quality revolution" (p.1).

Germany: An Alternative Scenario

But in German-speaking central Europe (Germany, Austria, and Switzerland), people educated in economics did. In German areas those who study economic subjects major in *Volkswirtschaftslehre* (economics, eighth on the list of the ten most popular majors in 2017), *Betriebswirtschaftslehre* (business economics, first on the list, accounting for 30 percent of the students in the top ten majors), or *Wirtschafts-Ingenieurwesen* (the economics-engineering degree), with a curriculum composed half of economics and half of engineering courses studied primarily in technical universities (*technische Hochschulen*) and sixth on the list of the ten most popular majors. VWL (*Volkswirtschaftslehre*) has little to do with the shop floor, but from its origins in the late 19th century BWL (*Betriebswirtschaftslehre*) not only covered business and commerce but manufacturing; lecturers in business economics regularly taught factory people about business administration. [See on the origins of BWL, Locke (1984) *The End of the Practical Man: Entrepreneurship and Higher Education in Germany, France, and Great Britain, 1880–1940*, chs. 5, 6, and 7.]

This connection between business economics and engineering developed decisively when BWL Professor Willi Prion established the *Wirtschafts-Ingenieur* degree in the technische Hochschule at Charlottenburg (Berlin) in 1924. From there it spread, especially after World War II, to other *technische Hochschulen* to become the popular major it is today.

I learned about the role that Germans educated in business economics and economics-engineering played in the propagation of sustainability management when visiting Germany in 1994. Before leaving the US, I asked Robert W. Hall, founding member of the Association of Manufacturing Excellence (AME), about Germans to contact. He replied that I should above all see Horst Wildemann, because he is the "repository of nearly all the coming of manufacturing excellence practice to Germany, a part of it almost from the beginning." (Letter, 25 June 1994) Wildemann, indeed, had started to learn about Japanese methods early—while attending a semi-

nar in 1978 at the European Foundation for Management Development in Brussels —from a Japanese professor who was also an invitee to the gathering; he introduced the German professor of business economics to Just In Time, *kanban*, and other Japanese techniques.

In Germany I spoke first with Dr. Dieter Kirchner, chief executive of the German Trade Association Gesamt-Metall (an employer group). In response to my question about influential management bestsellers, Kirchner unhesitatingly pointed to his bookshelf at the German language edition of *The Machine That Changed the World*, the famous exposition of Japanese lean production in automobiles, with the comment: "This book is not just a bestseller but an eye-opener for automobile and nonautomotive executives alike." (Interview, Gesamt-Metall headquarters, Cologne, 18 July 1994) I asked the same question of all people I interviewed and received the same response. The mass circulation newspaper *Süddeutsche Zeitung* that I picked up at a newsstand in Munich was running a series on "lean production," another indicator of how much the ideas in *The Machine that Changed the World* were being popularized in Germany.

When I interviewed Wildemann, he was Professor of Business Economics with emphasis on Logistics at Munich Technical University where he taught courses primarily to engineering students on work-process innovation. In 1994 he headed a substantial group of over 100 research-consultants (30 percent with business degrees (*Betriebswirte*), 50 percent with degrees in economics-engineering (*Wirtschafts-Ingenieure*), 20 percent with engineering degrees (*Diplom-Ingenieure*), which included 35 graduate assistants. Their work was heavily oriented to mathematical modeling and computer simulations. At the time, from five to ten students earned doctorates under him yearly; about 120 of his current students and assistants were active consultants with firms; former students and assistants had also moved into consulting agencies, including German branches of American consultancies, the Boston Consulting Group and Arthur D. Little. Like all German professors, he had also published books, often with his associates as co-authors, on such subjects as strategic investment planning, creating synchronized production, the Just In Time concept, and the introduction of continuous quality improvement. Here are some of the titles in German of books he gave to me:

- (1987) *Das Just-in-Time-Konzept: Produktion und Zulieferung auf Abruf*
- (1987) *Strategische Investitionsplanung*
- (1988) *Produktionssynchrone Beschaffung*
- (1989) (ed.) *Fabrikplanung: Neue Wege—aufgezeigt von Experten aus Wissenschaft und Praxis*
- (1992) *Arbeitszeitmanagement: Einführung und Bewertung flexibler Arbeits- und Betriebszeiten*

- (1993) *Optimierung von Entwicklungszeiten: Just-In-Time in Forschung und Entwicklung und Konstruktion*
- (1993) *Unternehmungsqualität: Einführung einer kontinuierlichen Qualitätsverbesserung*
- (1994) *Qualität und Produktivität: Erfolgsfaktoren im Wettbewerb*

By 1994 Wildemann's team had already introduced Japanese production processes in 200 European (mostly German) firms over a period of 11 years, including Daimler-Benz, Grundig, Philips, and Volkswagen. At Volkswagen his group, when I caught up with him, had just spent three years teaching small-group quality control management techniques in five-day courses to over 2,500 managers. [Locke (1996) *The Collapse of the American Management Mystique*, pp. 199-201]

In the interview Wildemann confirmed that his team had worked with 200 firms on the introduction of reformed work processes, and since I knew that German laws on co-determination required employee-elected works councils to participate in the implementation of new training schemes, I anticipated that there had been resistance from them especially at Volkswagen, where IG Metall, the powerful trade union, dominated works councils. Wildemann replied to my question about reform under co-determination that in four years at Volkswagen he had worked closely with works councils and IG Metall shop stewards. The works councilors he worked with, in his words, were "very intelligent people," who fully appreciated the need to improve work processes, but also understood the impact that the changes would have on jobs numbers in the workplace and on the need to reduce work time and pay.

After noting that his group taught the new techniques to VW shop stewards at the same time that it taught them to management, he commented that the union (IG Metall) not only promoted the implementation of Just In Time and other work processes but often led management instead of following it in their adoption.

Some German work place features other than co-determination also favored over American counterparts the introduction of lean production processes of continuous improvement. Daniel Friel, in (2005) "Transferring a Lean Production Concept from Germany to the U.S." *The Academy of Management Executive*, 19:2 (May), (pp. 50-58), writes about one German multinational corporation's efforts to introduce the same lean production concept in two of its factories, one in Germany, the other in the US.

> Although new organizational charts were drawn up on their facility in the United States, the actual way work was done did not change. Hence the German multinational lean production program failed to alter production or research and development times at the US facility. In stark contrast, the manner of work at the German plant facility altered dramatically, enabling the firm to reduce product development times from seven to three years and to cut production times by half. (p. 50)

The author concluded about lean production reforms that

> at least part of the success of any lean production program depends on the institutional environment within which a firm is operating. Lean production functions best when a training system provides workers with a high level of broad-based analytical skills [as in Germany] and labor laws that engender the retention of employees and facilitate their integration into the decision-making process [as in Germany]. (p. 50)

Wildemann estimated in 1994 that from 30 to 50 percent of German industry had already successfully implemented Total Quality Management, Just in Time, *kaizen*, and/or other Japanese work-process techniques. His group, moreover, did not work in isolation. The graduates in business economics and economics-engineering always worked alongside engineers like Mike Rother on process reform. He began his career in the manufacturing division of Thyssen AG, and while propagating the Toyota *kata* as an associate in the Department of Industrial and Operations Engineering at the University of Michigan, was a guest researcher at the Technical University Dortmund and a researcher at the Fraunhofer Institute in Stuttgart, implementing sustainable firm continuous improvement reforms. Now, in 2018, Rother and Professor Constantin with associates, organize conferences in which they actively participate and teach on-line *kata* courses through The KATA School, Germany. Because he and others in Wildemann's successor generation, like those working in the Lean Enterprise Institute (in Festool), continue the work, Wildemann's 1994 estimate of the successful completion of work process reform in Germany expands.

Consequence: Financialized Management Liquidates the "Results" of the Japan "Shock" in US Industry

Real world economists would surely have made their own work more empirically relevant had they gotten involved in the sustainable management movement. That they did not meant that they left the finance capitalists alone to manage the fallout in America. This financialized world does not sustain firms but treats them as assets to be exchanged in order to maximize returns primarily to those involved in the deal-making, with results during the Japan "shock" that diminished firm cohesion mainly at the expense of the non-dealmakers.

Within firms the incomes of the richest have benefitted handsomely from the financialization of CEO salaries through stock options. Petra Dünhaupt in (2011) "Financialization and the rentier income share – evidence from the USA and Germany," *International Review of Applied Economics*, claimed that the introduction of stock options into American CEO pay alone is responsible for increasing their share of total incomes from two percent in 2000 to eight percent in 2007 (p. 19). Dünhaupt concludes that given the proximity of the CEO's position to capital owners rather than to workers, the stock option is closer to capital income than to wage income and should be classified with the former, i.e., with financialization rather than with earned wages.

Outside the firm, intensifying in the 1980s, the US financial experts entered into various kinds of deal making. Some in the caste guided quite successful public firms into leveraged buyout schemes that converted them into private equity companies. Only firms with significant untapped borrowing capacity, undervalued assets, and high cash flows—"common characteristics of many, if not most, of America's largest and more prosperous corporations" (J. S. R. Shad (1984) "The Leveraging of America," *Security Exchange Commission News*, 7 June, p. 6)— could get involved because buyouts were financed from money borrowed on a target company's own credit line, and the huge debt incurred was paid back from the target company's own cash flow (J. Kosman (2009) *The Buyout of America: How Private Equity Will Cause the Next Great Credit Crisis*).

The language that managers and business school academics use in articles about restructuring, mergers, acquisitions, leveraged buyouts and the like rarely, if ever, touches on how employees are affected—other than to mention as an afterthought that rumors of these deals affect employee morale and retention rates and must be managed carefully. Nor are they concerned with the sustainability of firms, if their liquidation can be for the liquidators highly profitable.

If these deals made money for institutional investment funds that lent the money (e.g., public employees' pension plans), i.e. the deal makers, the target company shareholders (who received 50 to 100 percent premiums over the current market price of their stock), and managers, who were given golden handshakes, they severely affected the welfare of employees.

One important example of how employees suffered is the management caste's desire to break pension and benefit agreements in renegotiations to save firms. Defined benefit private pension plans, entered into during the pre-1980 era, were a big cost problem. There were 112,000 of them in the US in 1983, each guaranteeing fixed levels of income to retirees. Many defined benefit plans were not fully funded; that is, management, pressed by stockholder desire for good quarterly income statements and dividends to keep the stock price high, had made funding their employee pensions a low priority. Tough-minded managers during the 1980s sustainability crisis preferred to eliminate pension and benefit plans altogether or, failing that, to move employees into undefined contribution schemes that did not guarantee fixed incomes for retirees, or to establish individual pension savings accounts that greatly reduced company contributions and obligations.

Undefined benefit plans and individual savings accounts permitted management variously to lower the benefit amounts, to borrow from their employees' individual accounts, to pressure workers to put company stock into their personal retirement accounts, or to manipulate a plan's fund in ways that let a company appear to be more profitable than it was. In these schemes, the workers usually assumed all the risks when the companies suffered from stock and bond market declines. Financial institutions, too, preferred undefined contribution and individual savings account

plans because fees for managing them were high—typically two to four percent of a worker's contribution—a significant reduction in his/her pension, although a steady stream of income for financial institutions managing accounts.

Jack Ramus (2004) in *Pension Plans in the Corporate Cross-Hairs* calculated that

> From Reagan through [George H. W.] Bush business schools and financial crisis corporations have been terminating and undermining group pension plans by shutting down plants and moving companies, underfunding the plans, diverting funds to other corporate use when they can get away with it, and then, when the plan is in jeopardy, with the assistance of government and the courts, funneling whatever remains into 401-K type personal savings plans. From the passage of the Employee Retirement Income Security Act (ERISA) in 1974 until 2003, more than 160,000 Defined Benefits plans have gone under in the US. (p. 3)

During the same time the number of personal retirement accounts mushroomed. Very few households had such accounts in 1982, but by 1995, 23 percent of households had a 401-K or an equivalent individual retirement account. That percentage reached 67 in 2004. The financial management caste, allied with friends in Congress and the Oval Office, carried through this radical transformation of private pension planning to the great detriment of employees and their local economic communities everywhere in America (A. H. Munnell et al. (2008) *The Financial Crisis and Private Defined Pension Plans*).

Those who terminated defined pension plans became management heroes, like Richard S. Miller, CEO of Bethlehem Steel, who jettisoned the company's $3.7 billion unfunded pension obligation to its retirees. This obligation removed, venture capitalist Wilbur L. Ross, now President Trump's Secretary of Commerce, bought the firm, combined it with four other derelict steel firms, and then sold the amalgamated firm, which had cost him $400 million to buy, for $4.5 billion. [M. W. Walsh (2005) "Whoops! There Goes Another Pension Plan," *The New York Times,* 15 October]

"What bothered Mr. Conway, the union leader [at the demise of Bethlehem Steel]," NYT reporter Walsh wrote,

> was not so much Mr. Ross's inability to wring more money out of the pension system or his remarkable profit on the deal. What troubled him, he said, was that the country seemed unable to take any lessons away from the demise of the steel companies and how it affected so many working people. 'It just staggers us that America's not caught on to what's happening to it.' (p. 4)

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Counterfactual judgments in history are always difficult. If the Post-Autistic/Real-World economists had delved seriously into the sustainable management movement, would they have advanced towards their goal, as the Paris students desired, of making economics more empirically relevant? I think they would have, but we will never know because they did not, and this failure contributed to the denouement under the reign of US financialized management just described.

With the Germans educated in economics we do not have to engage in counterfactuals. They did become heavily involved in the firm sustainability management movement alongside engineers, with government cooperation, which has had a discernible effect on the preservation of German firms and their economic communities.

That the German outcome is quite different from the American can be demonstrated through comparative analyses of the top 20 firms in each country in 2012, ranked by revenues.

United States

1. Exxon 2. Wal-Mart 3. Chevron 4. Conoco-Philips 5. General Motors 6. General Electric 7. Berkshire-Hathaway 8. Fannie Mae 9. Ford 10. Hewlett-Packard 11. AT&T 12. Valero Energy 13. Bank of America Corp 14. McKesson 15. Verizon Communications 16. JP Morgan Chase & Co 17. Apple 18. CUS Caremark 19. IBM 20. Citi Group

(Source: C. Stahl (2013). "Corporate Social Responsibility in U.S. and German Firms." Master's thesis. Graduate School of Business, University of Grenoble, p. 59)

Germany

1. Volkswagen 2. EON 3. Daimler 4. Siemens 5. BASF 6. BMW 7. Metro 8. Schwarz 9. Deutsche Telekom 10. Deutsche Post 11. Aldi Group 12. BP Europa SE 13. Robert Bosch 14. RWE 15. Rewe Group 16. Edeka Group 17. Audi 18. Thyssen Krupp 19. Deutsche Bahn 20. Bayer

(Source: Stahl, 2013, p. 61)

Some firms on each list are classifiable under the same rubric, e.g., retail giants (in the US, Wal-Mart and McKesson; in Germany, the Aldi and Edeka Groups). Others are famous oil and energy firms, mostly on the US list. But there are two significant differences between the lists that are of interest here. One is that among the top 20 US firms there are many drivers of financialization (Berkshire-Hathaway, Fannie Mae, Bank of America, JP Morgan Chase Co, Citi-Group, and GE Financial), or US firms that are the creation of financialization (Hewlett-Packard: IPO 1957; Apple: IPO 1980). On the German list, there are none, i.e., not one is a financial institution, not one is a stock market IPO creation.

The second big difference gleaned from the comparison pertains to manufacturing. Few of the manufacturing firms on the US list were famous before World War II (Ford, GM, GE, which are in trouble now), but such firms dominate the list of the German top 20, many of them prominent even before World War I (Deutsche Post, Robert Bosch, Daimler, BASF, Thyssen Krupp, Bayer, and Deutsche Bahn).

The reasons for their sustainably should not be traced to inherited management methods—although fame and importance to community had much to do with it—but to their ability to work closely with sustainable management teams to reform production processes, such as Horst Wildemann's team at Volkswagen, number one on Germany's top 20 list.

Plausible Conclusions

1. Whereas financialized management frustrates the implementation of sustainable management in US firms, in Germany, the reformers, including business economists and economics-engineers succor the survival of the communities in which they are embedded, thereby, after the fallout from the Japan "shock," leaving German-speaking central Europe with fewer economically blighted rust-belt communities than America.

   There is, however, a caveat: East Germany. Sustainable process reform there sometimes encountered the resistance of local workers and management with mentalities inherited from the communist era that obstructed the intrusion of new management with lean production ideas into their world—as in the eastern town of Görlitz, where Bombardier's attempt to modernize management in its railroad car factory failed and the factory closed, resulting in unemployment and economic hardship in the community.

2. If people studying economics, finance, and business want their studies and know-how to be empirically relevant, they need to follow the example of German *Diplom-Wirtschaftsingenieure* in education and career.

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