

# Moral Sources of Competitiveness: Revisiting Moral Economy from an Organizational Perspective

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## Abstract

*This essay explores the intersection of morality and economy, not only within pre-capitalist or market-based economies, but across the entire spectrum of human experience, in evolutionary as well as historical and comparative terms. For this broader investigation, a more dynamic conception of moral economy is required, with these constructs on equal terms, more or less, as two related domains of human experience. A historical perspective in particular may enhance our understanding of the moral economy dynamic more generally, especially as it sheds light on Thompson's (1971) notion of a moral consensus, rooted in past notions of legitimacy. In some circumstances, my argument goes, such as Meiji Japan, a past moral consensus may be re-contextualized and reconstituted following the transition from feudalism to capitalism, and may continue to have influence, albeit in a modified form, after this period. Cooperation is then encouraged, and/or compliance, across diverse social groups, leading to economic outcomes that are, over the long term, beneficial for large sectors of the population. This essay also explores relationships among the economic and moral principles upon which are grounded the conditions for global competitiveness. The moral sources of competitiveness discussed in this essay are those that are situated historically and specific to a particular moral-economy dynamic, in this case, those created within the institutional framework of the Toyota Motor Corporation.*

## Introduction

It is the purpose of this essay to explore certain aspects of the relationship between morality and economy, especially as these are expressed in complex work organizations that are active in global economic competition. Reports from distant quarters of the moral universe bring word that our received species of rational economic man, *Homo economicus*, and his self-regarding morality is not universally recognized, nor widely accepted, and thus may not be a workable model for a sustainable economic future (Gintis et al. 2005). Ethnographic and other forms of evidence suggest alternative moral orders where the game is not played by rules that are predicted by neo-classical economic theory, yet producers still manage to deliver goods and services that are competitive in the global marketplace (for example, open source code software, Moody 2001; quality management practices, Winter 1990; Cole and Mogab 1995). My endeavor revisits the terrain of morality and economy with an eye toward understanding moral-economy dynamics. First, some of the definitions, concepts, and issues that are important in any exploration of such relationships are fore-grounded. Then a Japanese case illustration

is presented that may enable consideration of some initial propositions regarding *moral sources of competitiveness* from a perspective that takes us beyond the Western tradition of moral reasoning. I discuss *moral sources of competitiveness* at a later point in this essay, but here I introduce it briefly as an economic phenomenon that directly or indirectly generates sustainable gains for large sectors of a producer and/or consumer population. At the same time, it reflects a broad consensus, coalition, or accord among diverse social groups, such as classes, concerning the moral legitimacy of the economic practices in question.

## The Domain of Morality

The *moral domain* is defined here as locally constructed meanings and enactments, together with their attendant emotions, that discriminate between what is considered or interpreted to be *good* or *right* on the one hand, and what is *bad* or *wrong* on the other. Such discriminations pertain especially to meanings and enactments within human social relationships, or relationships between people and other subjects or objects, such as deities, non-human animals, or non-living things (Turiel 2006; Thomas 1997). There is no implication here that any given moral order is *good* or *bad* in any absolute or universal sense;

only that a local morality defines *goodness* and *badness* in situ. Locally constructed moralities may not be acceptable as such when they cross boundaries of space or time, and may be reinterpreted or recast in ways that transform them into ambiguities or even into their opposites. The possibility of universal moral principles or central human tendencies such as reciprocity or human rights, for example, applied to subsistence (Scott 1976) continues to be an important debate in the literature (see Fry 2006). Even such central tendencies are locally nuanced and guided by simultaneous, multiple, and sometimes conflicting human moral goals, situated within multi-layered and interacting social contexts, maneuvered by agents, both singular and collective, and constrained by the availability of resources offered up through the vicissitudes of local circumstances. Therefore, for purposes of this essay, please understand morality as a universal human experience influenced by proximal forces.

Moral considerations are particularly salient where there are power differentials and conflicts of interest, and/or where decisions may result in harm or injury to a person or group. A given moral order may place restraints upon the powerful, through law or informal social mechanisms, or it may condone the actions of the powerful as weaker parties suffer harm, depending upon the context, and the contingencies of the situation (see Scott 1985). Such conditions vest moral judgments with special gravity; that is, actors likely face accountability afterwards and face consequences if they do the *wrong* thing. Yet, in times of rapid social and economic change, increasing complexity and/or uncertainty regarding outcomes may make any decision inherently more risky, including moral choices. Thus, morality is an especially important subject during times of social and economic change.

### The Domain of Economy

Classically, in keeping with Polanyi's (1944) discussion in *The Great Transformation*, economic anthropology recognized a fundamental difference between so-called primitive or pre-capitalist and modern societies. The former embeds economic activities in various types of social institu-

tions like kinship, politics, and religion, while the latter develops separate economic institutions such as the market that displays its own *self-regulating mechanisms*, for example, the law of supply and demand. Previously, economic phenomena had been characterized differently in these two types of societies. In pre-capitalist societies, economic behavior generally was viewed as the provisioning of human needs (primarily, subsistence or exchange activity; see Sahlins 1972). Indeed, this was the first way in which 'economy' was defined—as the “art or science of managing a household” (dated from 1530; see Oxford English Dictionary 1971:831). In market societies, on the other hand, *economy* means the rational maximization of individual utility or preference, whether associated with material provisioning or other desirables (Wilk 1996). More recently, emerging scholarship across the social sciences dealing with economic globalization has been eroding the conceptual and actual barriers between pre-capitalist and modern societies. It has become increasingly clear that *economy*, whether conceived as management at the household or larger administrative levels is a basic type of human behavior that is socially embedded in various kinds of institutions; the new institutional economics is one example of such scholarship (see Menard and Shirley 2005). Also, it is increasingly evident that all societies display the economic rationality of the maximizing individual (see Appadurai 1986; Wilk 1996; Ong and Collier 2006). We are thus bequeathed with two quite different conceptions of economy, that is, material provisioning and rational maximizing, which are not mutually exclusive, and may represent phenomena at different levels of analysis—social systemic and individual cognition and behavior (Wilk 1996). For purposes of this discussion, we will be especially interested in phenomena that rest at the nexus of these two conceptions, that is, the management of material provisioning for production and/or consumption that involves some form of rational maximizing, both at the individual and organizational levels of analysis.

By any definition, economic activity embeds morally-relevant meaning and action. Material provisioning of production or consumption requires exchanges involving allocations of

valued yet scarce resources among parties. Such transactions require qualitative and quantitative judgments about *good* and *bad*, or *right* and *wrong*, with respect to means and ends, as well as the moral qualities of trading partners, as noted by Sahlins (1972) in his seminal work on reciprocity. Rarely are the values represented in human exchanges exactly equivalent, and individual contributions to the creation of differing forms of value may be difficult to measure, and may fluctuate over time, adding to complexity (see Kaplan and Gurven 2005). The moral issues that arise within the economic sphere include judgments concerning the process of allocation or exchange. For example, what decision rules or criteria should be used to make allocations of resources, and judgments about the outcomes of the process? Should resources be allocated more or less equally among recipients? These judgments flow from interactions between conceptions and enactments of morality and economy embedded within the social context.

When viewing economic behavior as rational maximizing of individual utility, moral issues are particularly evident. For example, what sort of professional ethics attends the organizations and individuals that may be involved in the business of rationally maximizing their interests, especially if this happens at the expense of others? This serious question plagues modern business ethicists, and it could worry anthropological practitioners who work inside modern business organizations. As American business organizations have evolved ever farther toward their emphasis on shareholder interests in the past two decades (Jacoby 2005), it is not clear how the economics of rational maximizing that correlates with these interests can be accommodated to more generalized moral frameworks. The latter are broadly accepted in democratic civil society such as individual liberty, equal rights, and arguably, the avoidance of undue discrepancies of wealth.

### **Moral Economy**

The Marxist historian E. P. Thompson (1971) popularized the concept of *moral economy* in his study of 18<sup>th</sup> century English crowds, that is, food rioting. He showed that moral outrage and violent uprisings might result when traditional

social norms representing a legitimate consensus about past economic practices come up against different or emerging market-based practices, such as food prices, perceived to be illegitimate. Prior to the 18<sup>th</sup> century in England, it was considered illegitimate in times of dearth to withhold or “forestall” food staples such as corn from the market in order to increase its price by exacerbating shortages. See Fei (1948) for a discussion of the exclusion of markets from traditional Chinese villages to preserve moral order. During such times, riots might break out when market-going consumers, often women, suspected that these and other questionable practices were indeed being used by farmers and others in the provisioning “supply chain” to raise prices, or cut sellers’ costs, at the consumers’ expense. Thompson generalized from this case study to conceptualize moral economy as “a popular consensus about what distinguishes legitimate from illegitimate practices, a consensus rooted in the past and capable of inspiring action” (Arnold 2001:86). Significantly, the English crowd was able to “set the price” of food staples through spontaneous, direct action in the streets and farms—seizing food supplies and forcing them to market under a popular price (Thompson 1971). These practices continued over the course of the 18<sup>th</sup> century, so long as influential *paternalists*, such as chief justices, members of parliament, and magistrates agreed with the working poor that forestalling food was not a legitimate practice during a time of dearth. Indeed, it was an illegal act at that time. Thompson explains the coalition of forces that condoned direct action by English crowds as follows:

It is of course true that (food) riots were triggered off by soaring prices, by malpractices among dealers, or by hunger. But these grievances operated within a popular consensus as to what were legitimate and what were illegitimate practices in marketing, milling, baking, etc. This in its turn was grounded upon a consistent traditional view of social norms and obligations, of the proper economic functions of several parties within the community, which, taken together, can be said to constitute the moral economy of the poor. An outrage to these

moral assumptions, quite as much as actual deprivation, was the usual occasion for direct action...this moral economy...supposed definite, and passionately held, notions of the common weal—notions which, indeed found support in the paternalist tradition of the authorities; notions which the people re-echoed so loudly in their turn that the authorities were, in some measure, the prisoners of the people. Hence this moral economy impinged very generally upon eighteenth-century government and thought, and did not only intrude at moments of disturbance (Thompson 1971:78-79).

According to Thompson, the moral coalition of paternalists and the working poor continued over the course of the 18<sup>th</sup> century, until anti-Jacobin fears led authorities to take military action against such so-called crowds and the rise of liberal ideology. The military action crystallized with the publication of Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776. This work, and its interpretation by Smith's followers, provided those with market-based interests a new moral argument against the persistence of traditional practices, that is, the greater good of the nation was better served by free competition in an open market environment.

The political scientist James Scott's ethnographic studies in Southeast Asia (1976, 1985) further reveal that discourse related to locally-based moral economies may act to constrain certain market-based practices. Such constraint is achieved through "everyday" acts of resistance that do not necessarily take violent form such as riots, but are effective nevertheless in dampening the worst excesses or abuses of the market in transitions from subsistence agriculture to agrarian capitalist economies. In Scott's *Weapons of the Weak: Everyday Forms of Peasant Resistance* (1985), resistance expresses itself often in religious terms, for example, through rumors attacking the reputation of those violating Islamic prohibitions against usury, or exhortations to protect the most vulnerable of the poor, as required by Islamic scriptures. At times, however, resistance by the desperate and dispossessed goes beyond words and includes outright acts of

theft, killing of livestock, sabotage, boycotts, and other forms of militant organizing against offenders. Scott's (1976) research provides empirical evidence for the claim that the right to subsistence may be one that is central to human experience; that is, no one should starve or be malnourished while others in the community have a surplus. For related arguments, see Fei (1948).

Such studies, while invaluable in formulating the moral-economy construct, seem to have created an impression that this concept is limited to instances of moral outrage or forms of physical or other resistance mounted by pre-market or non-market social groups against market-based economic forces (Arnold 2001). More recently, other political scientists have more broadly conceptualized moral-economy phenomenon; for example, when a modern, but economically depressed community in the United States resists the designs of commercial real estate developers (Ramsay 1996), or a small community in the arid West of the United States rebels against the fraudulent maneuvers of a larger and more powerful community to capture its water rights (Walton 1992). Both of these studies involve power struggles for control over social goods (Arnold, 2001) in cases where a wealthier or more powerful group intended to put the social good in question to a new use perceived as illegitimate by an original group that held a prior consensus around a legitimate use for the good.

This essay explores the notion of moral economy in a more expansive context, considering the intersection of economic activity and morality, not only within pre-capitalist or market-based economies, but also across the entire spectrum of human experience, in evolutionary as well as historical and comparative terms. For this broader investigation, a more dynamic conception of the interaction between morality and economy is required. These constructs must be on nearly equal terms as two related domains of human experience. Perhaps they are best represented as *moral-economy*, or even *moral/economy*, rather than the current construction of *moral economy*, which appears to set up *moral* as a qualification or modifier of *economy*, implying that



- our primary interest is in economy, rather than morality;
- from a normative or values perspective, an economic system should or must be moral in the sense of being fair or just, and
- market economies introduce conditions under which economic justice cannot be sustained.

Certainly, for our purposes, the first is not necessarily the case. The second is a noble purpose and not to be denied in an idealistic sense. The third seems unnecessarily restrictive in constraining our view of moral-economy interactions to situations in which an economic system violates the basic principles of justice, and to those in which unscrupulous marketing practices provoke moral outrage. This latter view would seem to place morality and economy within the confines of an endless conflict, influenced perhaps too much by stereotypical notions of capitalist societies as being dominated by a homogenous and/or hegemonic form of impersonal market system, inhabited by a single kind of human being, the rationally maximizing, materialist denizen, *Homo economicus*. If this vision of capitalism is an over-simplification, which recent scholarship suggests that it is, then perhaps moral-economy interactions may result in something other than outrage, riots, sabotage and resistance; see Blim (2000) for a discussion of capitalism in late modernity. Further, if *H. economicus* is not the only species of human that exists in the moral universe, that is, if other societies present different configurations of moral-economy that are not so thoroughly dominated by optimization of individual utility and self-regard, then again perhaps moral-economy interactions may result in something other than outrage, riots, sabotage and resistance. By approaching the phenomena of interest with a wider-angle lens, it is conceivable that a new perspective may come into view.

Dorinne Kondo points toward an alternative perspective on moral-economy in her book *Crafting Selves: Power, Gender and Discourses of Identity in a Japanese Workplace* (1990). Commenting on owner-targeted criticisms made by employees of the small Tokyo confectionery shop she studied, Kondo explicitly rejects the representation of

resistance offered by Scott and other Marxist and neo-Marxist writers:

Rather than relying on notions of a whole subject who can authentically resist power, on a notion of power as simply repressive, and therefore on the assumption that there exists a place beyond power; rather than seeing resistance as a mechanism of social reproduction within a closed system...I would argue for a more complex view of power and human agency...our starting point for a politics of meaning should not be a monolithic category of hegemony or domination countered by a grand, utopian space of pure resistance, especially if the forms of that hegemony or resistance become foundational categories which can always be known in advance. To indulge in nostalgic desire for "authentic resistance" might blind us to the multiple, mobile points of potential resistance moving through any regime of power (Kondo 1990:224-225).

Kondo is not only a post-modern theorist criticizing a Marxist. Her analysis is grounded in a particular place and time where conventional constructions of moral economy may not be fully satisfying. In Japanese work organizations, *resistance* as it has been described elsewhere in the literature takes on different forms and has different consequences, both for individuals and for organizational entities. For example, despite low wages, poor working conditions, the apparently arbitrary use of power, and constant surveillance by cameras on the shop floor, these are the forms of employee resistance Kondo reports. Besides perpetual grouching, the forms are declining to participate on a company trip for part-time employees and refusal to purchase broken-up cherry tarts. A potentially more serious problem is turnover when workers leave the firm for better paying jobs elsewhere, a long-standing pattern among Japanese artisans (Dore 1973). There is little or nothing to speak of in the way of theft, sabotage, violence, or political counter-organizing. Workers even participate in their own exploitation by illegally working twenty-two hour shifts during an especially busy season. Part of the reason for this difference in behavior when comparing low wage Japanese workers with those

in Malaysia or England may be the ways in which morality and economy historically and socially manifest themselves in Japan, and therefore interact with one another to shape employees' responses to employment practices (discussed further below; see also Bellah 1985).

Further evidence of the need for a more nuanced approach to moral-economy interactions is provided by Ong (1988), whose study of Malaysian female workers in Japanese-owned factories based in Malaysia describes an entirely different context for low wage labor and exploitative working conditions sponsored by Japanese firms. In this case, responses to the situation were highly complex and multidimensional. They included mild mannered compliance by the women workers, making these plants even more profitable than those in Japan. But they not only included negotiations for more favorable treatment with cooperative supervisors, but also disruptive physical reactions involving secret attacks on factory machinery – so-called *mass hysteria* or *spirit attacks* among the women – and violence against factory managers by village youths who perceived that the women workers had been mistreated. Ong calls this *rough justice* (1988:212).

The complexity revealed by Ong's (1988) study, where ethnic and gender differences among factory owners, managers, and workers create the social distance that Sahlins (1972) finds is a corollary of negative reciprocity, or getting more than one gives, suggests that Kondo (1990) could have taken her analysis further. That would have occurred if she had pushed back in time to analyze historically cases of more serious resistance, such as riots or strikes, among Japanese workers that took place during the transition from feudalism to capitalism. That was when social distance between industrial entrepreneurs and workers also was peaking in that country. She might have noted how such violence was provoked and then ameliorated. A historical perspective may enhance our understanding of the moral-economy dynamic more generally, especially as it sheds light on Thompson's (1971) own notion of a moral consensus, and we may add, consent, rooted in past notions of legitimacy. I argue here that in some circumstances, such as Meiji Japan, a past moral consen-

sus may be re-contextualized and reconstituted following the transition from feudalism to capitalism. It may continue to have influence, albeit in a modified form, after this period, encouraging cooperation, and/or compliance, across diverse social groups. Such a moral consensus may then lead to economic outcomes that are, over the long term, beneficial for large sectors of the population. Historical scrutiny may enable us to discern if and how such cooperation was able to prevail rather than being quashed, as was the case for the English crowds, or seriously eroded, as was the case for Scott's Malaysian peasants.

Indeed, this is the way in which *moral sources of competitiveness* are conceptualized. They make up a special case of the moral-economy dynamic in which exceptional economic performance within a capitalist framework is achieved as a result of a moral consensus, cooperation, consent and/or compliance across diverse social groups. An agreement ultimately facilitates realization of economic benefits for those same groups, rather than the opposite scenario sketched out by Thompson (1971). If this argument has validity, it provides symmetry to the larger moral economy literature. In other words, it allows for an alternative to, or a resolution of, moral outrage, violence, and dissent when conditions are reversed. For example, consensus, cooperation, and consent produce benefits, rather than adversarial conflict producing wastage. The challenges of this essay are to set forth some set of background conceptualizations and empirical literature to support this claim, to identify contextual conditions that are related to cooperative outcomes, and to provide a historical exposition of these concepts and conditions through a Japanese case. We also will consider the situation that unfolds when localized moral-economy complexes that have grown out of one context are transplanted to other contexts without due consideration given to the historical, cultural, and contextual nature of their integrity.

### ***Homo economicus: Hello and Goodbye***

If social scientists have tended to view capitalist markets through a lens that magnifies moral outrage more than other types of phenomena, it is no surprise given the way in which such

markets have been characterized in the theoretical literature. Most social scientists, anthropologists included, have tended to accept, either implicitly or explicitly, economists' conceptions of *the market* as an impersonal system in which the exchange of commodities was increasingly separated from community-based social relationships (Miller 1995). The economists' conception bore within it a moral vision that is at once individualistic and materialistic, while at the same time representing *good* as a means of allocating scarce resources for the benefit of society in the long run. The model of human behavior here referenced has been given the nomenclature *Homo economicus*. This mythical species draws much of its substance from Adam Smith's *The Wealth of Nations* (1776), with its arguments for competition within free markets and the rational division of labor that best achieves greater efficiency, thus increasing profitability within an enterprise. From Smith's tome arises the rational economic man, a self-interested form of humanity who knows what he wants and acts rationally to maximize his preferences, while the *invisible hand* of the market ensures the best overall result for society as a whole. Of this rational economic man, Smith famously wrote:

As every individual, therefore, endeavors as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labors to render the annual value of society as great as he can. He generally, indeed, *neither intends to promote the public interest, nor knows how much he is promoting it.* But preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, *he intends only his own gain,* and he is in this, as in many other cases, *led by an invisible hand to promote an end which was no part of his intension.* Nor is it the worse for the society that it was no part of it. *By pursuing his own interest he frequently promotes that of society more effectually than when he really intends to promote it.* (Adam Smith 1776:423 emphasis added.)

The notion of an *invisible hand* directing the functioning of the market, while each individual pursues his or her own self interest, is the underlying moral vision upon which the notion of a free market economy is founded. Modern economic theory revises Smith's essentially moral philosophic vision in recognition of market failures and limitations, balancing these with policy mechanisms that are adjudicated by governments. Yet, such revisionism has not fundamentally altered the underlying theory of the essential *correctness* of free market principles as the *right* or most efficient way to achieve important societal goals such as economic growth, reductions in unemployment, and lower costs of consumer goods. From this perspective, capitalist economics arguably may be viewed as a form of *morality* in its own right.

The 21<sup>st</sup> century has brought about an intriguing shift in which the neo-classical vision of a society populated by rational maximizers has been falling out of favor with a growing number of professional economists. This is so even though those critical of the standard neo-classical approach have yet to integrate new insights into mainstream economic textbooks. Many of the Nobel Prizes awarded in economics over the past two decades have been granted for research that revises the *Standard Social Science Model* used in economics, which assumes that human behavior reflects the rational maximization of individual preferences. While economists recognize that actual human behavior does not conform to the requirements of this model, many still prefer to use the model in research and writing because of its power and utility in making theoretical and policy arguments. Yet, new research in economics is chipping away at the theoretical and empirical base of the model, producing anomalous arguments that are beginning to develop their own gravitas. Of particular interest is work in the areas of behavioral and experimental economics, which explores the influence of human psychology in economic decision-making. This work is based on Nobel laureate Herbert Simon's (1976, 1979) insights regarding *bounded rationality*. That is, no human controls sufficient resources of time or information to act in a fully rational manner, or to maximally pursue his or her advantage relative to

every decision. People *satisfice*, so to speak, and follow rules of thumb that provide *good enough* outcomes rather than the best possible outcome in all circumstances. From this work came experimental economics—using experiments in decision-making to make markets work more efficiently, and developing game theory to uncover and explain systematic departures from rational behavior. Nobel Prizes for this work were awarded to Vernon Smith and Daniel Kahneman (Coyle, 2007). A recent and particularly interesting innovation is neuro-economics, in which *functional Magnetic Resonance Imaging* (fMRI) is used to monitor the human brain during economic decision-making activity. Brain research in economics has revealed that different parts of the brain appear to predominate during different types of decision-making. According to Diane Coyle (2007:125), such research suggests that “there appears to be a rational economic agent inhabiting the cortex, fighting for control of decisions with less rational actors in the older limbic system.” This research is relevant because the experiments have revealed clear departures from self-interest, and they also have important implications for moral-economy interactions.

As a result of this broadening frame of reference, some economists have become more interested in another of Adam Smith’s works, namely *The Theory of Moral Sentiments* (1817/1759; Gintis et al. 2005). In this volume, Smith attempts to address the question of why *sympathy* toward others seems to be a fundamental emotion motivating human behavior. Sympathy was not a quality assigned to *Homo economicus* by Smith’s disciples. But the notion that people within a social community, including different classes, care about and *sacrifice* for one another, even at cost to themselves, reflects a line of reasoning that runs from David Hume through Thomas Malthus to Charles Darwin and Emile Durkheim (Gintis et al. 2005). Sympathy, or compassion in more contemporary terms, is a distinctive moral quality in its own right, and one that may have a relationship to reciprocity, defined in broad evolutionary terms.

We are all aware of cases in the ethnographic literature, in the non-human animal world, and/or in our daily lives, in which one individual defends other weaker ones, sometimes at the loss

of the defenders’ own life. Darwin mentioned this pattern as an evolutionary problem (1871); how could self-sacrificing behavior exist when those manifesting it were killed? Hamilton (1964) provides an explanation for selfless behavior in animals. He reasons that an individual’s fitness is extended to encompass the fitness of biological relatives because kin share certain alleles. Thus, when an individual defends or protects another animal that is likely to be a close relative, and only a close relative counts here, the caregiver is actually enhancing his or her own *inclusive fitness*. Evidence from several non-human primate species provides support for the inclusive-fitness hypothesis. Primates recognize both female and male kin through close associations early in life, while spatial location patterns also provide information for kin discrimination (Silk 2005). Coalition formation, where one individual intervenes on behalf of another in an agonistic encounter, are particularly convincing as they reveal that females are more likely to support and defend kin than non-kin. This argument appears to be a genetic form of enlightened self-interest and provides a biological basis for *morality* as good behavior to survive in a collective sense in the non-human world. And it may also explain how such emotions as empathy, sympathy, and behaviors of caring and sharing first emerged in early hominids (Fry 2006).

Another focus of anthropological attention to moral-economy derives from research on food sharing among contemporary small-scale human societies, particularly hunter-gatherers and groups that combine simple horticulture with hunting and gathering. Inter-familial food sharing is pervasive in virtually all such groups, so much so that they are known as *egalitarian societies* (Kaplan and Gurven 2005:76). Since agriculture originated only about 10,000 years ago, hominids probably lived as hunter-gatherers throughout the vast majority of our evolutionary existence, meaning that the study of food sharing among such societies may tell us something about the moral-economy nexus more generally. Such societies, with few exceptions, engage in a practice known as *reciprocal altruism*, which may be defined as the provision of food at one time in exchange for receipt of food at another time. In

this pattern, food sharing involves the largest, highest quality, nutrient dense food sources that are difficult to obtain and highly variable with respect to availability, generally meat or sea-based proteins. Producers such as hunters tend to exert some degree of control in the sharing process, with a primary distribution of food going to those who participated in the work effort, and a secondary distribution to those who did not (Kaplan and Gurven 2005:102). Over the short term, producers form preferential food-sharing partnerships, with high rates of giving and receiving. Those that give less also receive less. However, it has been noted that there are persistent imbalances. That is, some consistently give more than others, which is not all that surprising, given the stochasticity or randomness of family size and child demands, coupled with the long period of juvenile dependency. This means that reciprocal altruism is not the whole story.

To explain the variability in their data, Kaplan and Gurven (2005) propose a model in which *multi-individual negotiations* within small-scale societies resulted in the emergence of social norms that were collectively enforced, and importantly, these norms included not only cooperation but also *punishment*. They propose that non-cooperators were and are punished, as well as those who do not punish non-cooperators, norms that deter free riders from benefiting through generosity toward those who genuinely need help due to illness, nursing, and/or high dependency ratios. They note that laziness and stinginess are constant themes for gossip and ridicule, or punishment, in most of the societies included in their survey. These patterns are not unlike those observed by Scott (1985) among Malaysian peasants. However, while Sahlins (1972) acknowledges stinginess, self-interest and refusal to share as potential forms of deviation from typical reciprocity patterns, he does not establish *punishment* as a key element of reciprocity. Yet here the *reciprocation of non-reciprocation* appears to represent a critical element that sustains reciprocity over time.

In economic anthropology, generalized reciprocity is viewed as altruism, or according to Sahlins (1972) *weak reciprocity*, which might never be repaid, thereby, perhaps inadvertently, linking morality with weakness. Punishment is not an

important element in the theoretical model—the giver gives, even if the receiver never reciprocates. In balanced reciprocity, the driving notion is that of *truck*, *barter*, or *exchange* (Smith 1776), with the commanding symbolism of flows between or among exchange partners. Trading partners might be more or less successful in the practice of exchange (Appadurai 1986), but again, punishment is not sharply theorized. In negative reciprocity, one party gives less than she or he receives in return. However, it is not characterized as punishment, but cheating. Punishment is quite a different concept. It suggests that certain parties take it upon themselves to mete out negative consequences upon others who break the norms of reciprocity, regardless of the consequences for those delivering the punishment (Kaplan and Gurven 2005). Indeed, punishment is separated from exchange; it is politics in the service of moral-economy. Suddenly, morality is no longer weak; it has a political will to punish.

At the level of the social group, both cooperative and punishing behaviors may be conceptualized and modeled as reciprocal over long periods of time. They could provide an advantage to such groups in evolutionary terms. Such patterns may have been encoded both in our cultures at the level of enculturation and possibly at the level of genetics through natural selection as inclusive selection. A pattern of gene-culture co-evolution is postulated (Gintis et al. 2003).

Acknowledging that such findings challenge the notion of *Homo economicus* as a self-regarding hominid, experimental and behavioral economists, together with trans-disciplinary collaborators from other social science disciplines including anthropology, have been working together to re-examine human behavior in competitive and cooperative settings. From this work, emerges a new concept of human social behavior that is more fundamentally other-regarding. This concept is based upon the notion of *strong reciprocity*, which is defined as

a predisposition to cooperate with others, and to punish (at personal cost, if necessary) those who violate the norms of cooperation, even when it is implausible to expect that these costs will be recovered at a later date (Gintis et al. 2005:8).

Strong reciprocity is not the same as we understand reciprocity in economic anthropology, which does not embed the construct of punishment as conceptualized here. Strong reciprocity transcends previous arguments that polarized debate between the proponents of a view of humans as basically self-regarding as the *H. economicus* crowd, and between those who view humanity as essentially altruistic, perhaps derived from widespread observations of human *sympathy*.

It is at this point that experimental economics becomes especially relevant to our discussion. An interesting series of economic experiments has shown that people do not actually behave in the self-interested ways that neo-classical economists might assume they do when we confront them with choices that involve serving themselves versus serving others (Gintis et al., 2005). One type of game that has been used to test people's self versus other regarding choices is the so-called ultimatum game, in which two players interact anonymously for one round only. Let us imagine that Player X proposes how to divide a given sum of money with Player Y, say, \$10. If Player X's offer is accepted, for example, a 50/50 split, the money is shared accordingly. If Player Y rejects the offer, however, neither player receives anything; both receive \$0. For self-interested players, the goal would be theoretically to maximize one's gains. Since the game is played only once, and players do not know each other's identities, the self-interested Player Y should accept any amount of money. Otherwise, if she or he rejects the amount offered, she or he gets nothing, and any amount is worth more than \$0. Knowing this, the self-interested Player X should offer the minimum possible, say \$1, which should be accepted, since \$1 is more than \$0.

When the game is played, however, this is not what happens. In as many variations as have been played, Player X routinely offers Player Y substantial amounts above the minimum (50% of total generally being the model offer), and Player Y frequently reject amounts below 30%. Players will, however, accept *unfair* (far below 50%) offers made by a computer, but not from a human player (Coyle 2007:130). This suggests two things:

- 1) Clear departures from self-interest, since both players fail to maximize their gains, either by sharing as little as possible (on the part of Player X) or by accepting all offers of any substance (on the part of Player Y) (Gintis et al. 2005); and
- 2) Our tendency toward reciprocity is strongly influenced by what we believe to be the other parties' motivation or intention—if we believe the motive to be unfair (for example, being too stingy), then retribution (punishment) will be the response, even if it costs us (meaning we get nothing). These results argue against the rationalism of *Homo economicus*, who would never behave in such a fashion. The ultimatum game has been played around the world, usually with university students.

Such evidence has given rise to the view that reciprocity is one of the most important keystones of human moral thinking and action, as summarized in this statement by Fry:

Everywhere, reciprocity is a key element of human moral thinking. Humans repay good deeds and revenge bad ones. Across the spectrum of human societies, fulfilling obligations is good but shirking them is bad; kindness is good and gratuitous aggression is bad. An aspect of the reciprocity principle is that paybacks, whether positive or negative, should be roughly equal to the original deeds...at a fundamental level, the idea of justice in humans is linked to the reciprocity principle, but the specific paths to justice are extremely variable (Fry 2006:416).

Strong reciprocity may underpin a widespread moral tendency to do no harm or to hold others safe from harm, and motivate a special duty to society's weakest and most vulnerable members (Scott 1976; Smith 2000). One aspect of sympathy or compassion as a form of enlightened self-interest is that it discourages social unrest among the poor and sustains contributions to programs for people deemed *worthy* of help such as the working poor. For example, in peasant societies, the elite members may be bound by obligations of care and protection, to



the non-elite members who in turn are bound by obligations of service and loyalty. If these obligations are not maintained, the legitimacy of elite power and privilege erode, and may lead to peasant uprisings and violence among the poor (Sivaramakrishnan 2005; Scott 1976).

The form of reciprocity emerging from this discussion resonates to a certain extent with that which ethnographers have written about; that is, an empirically rendered set of culturally-nuanced transactions embedded in a network of social relationships, with each case being highly distinctive and sometimes glossed as *moral*. Yet, it is different as well. In addition to integrating the political principle of punishment, the discussion above has theoretically transformed strong reciprocity into a more-or-less trans-human principle of morality. In other words, that which is considered *good* or *right* springs from human evolutionary and cultural experience as variously shaped by society into myriad manifestations that ethnographers encounter separately in the field. The term *universal* is deliberately avoided, since that conveys an all-encompassing totality, which is not intended. Certainly, it is conceivable that some human groups did not or do not display strong reciprocity. Rather, what is intended is the idea that strong reciprocity emerges across cultural formations, prior to and after the Enlightenment, and is not contingent on Western constructs of liberalism. Strong reciprocity is, perhaps, an instantiation of the sort of moral principle that Kluckhohn (1944) challenged anthropology to discover. That is, a central human tendency which is drawn upon to legitimate, or de-legitimate, many forms of economic order that arise to power, and that will call those orders to account, sooner or later, if need be.

### Religion and Economy

With this essential foreground in place, attention turns now to the topic of *moral sources of competitiveness*. A potential candidate probably most familiar to social scientists is Max Weber's work *The Protestant Ethic and the Spirit of Capitalism* (1958/1930). Weber's thesis was an initial effort to explore the relationship between religion and economy, and it was in part a criticism, and perhaps a confir-

mation, viewed over the long term, of Marx's views on this subject. That is, Marx believed that economic phenomena determine ideology. Weber's *Protestant Ethic* embeds the opposite point of view that Calvinist religious ideology constructed capitalism. Weber's research attempted to construct a portion of the narrative of capitalism's early history. Merchants and traders emerged as a class in their own right, the bourgeoisie, during the 16<sup>th</sup> and 17<sup>th</sup> centuries in certain parts of northern Europe but primarily during the 17<sup>th</sup> century in Puritan England (Tawney 1958). Weber recognized that this class had found both a practical and a psychological means to break through what he saw as traditional prohibitions against the accumulation of wealth. His study was an effort to explain how and why this had happened. Noting that many of the bourgeoisie, or *parvenus* as Weber called the *arrived class*, were Calvinists at that time, Weber argued that their efforts to break through the economic and political hegemony of the aristocracy were abetted, perhaps unintentionally, by their religious beliefs.

While Weber's thesis explicitly links morality with rising economic power and thus would appear to conform at least in part to the previously established definition of a *moral source of competitiveness*, the appearance is superficial. Ironically, this potentially illustrative case does not satisfy our requirements because the moral force of the Protestant ethic was weakened significantly as its economic success gained strength through the rise of capitalism. In the following paragraphs, a brief digression is undertaken to summarize Weber's thesis, followed by a critical appraisal of the Protestant ethic as a *moral source of competitiveness*. This cautionary tale also serves as a kind of origin myth for *Homo economicus*, explaining the moral paradox by which that self-regarding brand of humanity came into existence as a result of intense religiosity.

### Weber's Thesis on the Protestant Ethic

Calvinists believed that each person had only one preordained fate—election to salvation or damnation—known only to God, a situation



that bred psychological distress. To soothe the nagging qualms of parishioners, pastoral advice recommended “intensive, self-confident worldly activity as the most reliable means” to dispel religious doubt and give the certainty of grace (Weber 1958:112). Yet, that was not all. Significantly, it was believed that God would bless only the efforts of the elect, not those of the damned. Thus, any proceeds from commercial activity had to be reinvested in the business, thus better to ensure a blessed result; “God helps those who help themselves” (Weber 1958:115). The engine of capitalism was ignited from this spiritual spark, and once this engine turned over, apparently it could not be stopped. It then ran on the logic of rationalism. It ran on the production efficiency that leads to increased profitability, with more to invest in the name of God’s glory, and more assurance that the investor was not damned. According to Tawney [1958:1(e)]. “The word ‘rationalism’ is used by Weber as a term of art, to describe an economic system based, not on custom or tradition, but on the deliberate and systematic adjustment of economic means to the attainment of the objective of pecuniary profit.”

By the time Weber wrote his original thesis, the German edition having been published in 1904-1905, the relationship between the bourgeois class and their Calvinist God had largely disappeared, revealing the fragility of specific moral-economy forms over time and place. As the bourgeoisie gained wealth and power, many lapsed Calvinists left the church. Little remained of their morality but the hungry *habitus* of capitalist rationalism, driven by the inner logic of competition for its own sake. That is, rationalist logic must continually be exercised within an enterprise, or it risked being overtaken by a competitor. Further, once the deity is removed from the Calvinist *habitus*, it is but a short step to the *appetitus divitiarum infinitus*—the unlimited lust for gain, which Tawney [1958:1(e)] notes has long been considered anti-social and immoral, before capitalism came along, and afterwards as well. The secularization of the economic realm lifted the religious ban against spending profits on hedonistic pursuits, thereby weakening the moral authority of capitalism as a potential fount of social benefit. Popular debates concern-

ing the place and role of wealth in the Protestant church continue apace (see Ellins 2006).

### The Protestant Ethic as a Moral Source of Competitiveness?

The claim that the Calvinist *habitus* represents a moral source of competitiveness, but only within its historical context, rests upon the argument that, as Weber portrays it, morality was *internal* to the economic order of the time. That is, it was *internal* to the religious ideology of the parvenus, but only before they became a capitalist class in their own right. Calvinist religious mores regulated behavior strictly, closely detailing what a merchant or trader may or may not do within the religious community. That applied as well to what could be done with the profit she or he gained from his or her enterprise. This religious morality was, in many ways, a stimulator of economic growth and a regulator of social differentiation; since profits must be reinvested, the business should grow, meaning a certain degree of economic flow-back toward the community versus hedonic pleasure for the bourgeoisie. Among Puritans, conspicuous consumption generally was discouraged along with displays of wealth that enflame jealousy and its social fall-out. For example, sabotage, theft, and class hatred were minimized or ameliorated. Weber emphasized that the *parvenus* understood their dependency on the need for free wage workers to make their businesses thrive, and since they were in a struggle with the aristocracy, access to free wage labor was not assured. Thus, the interdependency of the nascent working and middle classes may have been more apparent at this point in history than later on when the bourgeoisie became a ruling class, and is similar to Scott’s (1985) argument regarding the interdependency of landowning rich and landless or land poor peasants prior to the green revolution in Malaysia. Once the bourgeoisie became wealthy and powerful, however, the religious aspects of their practice began to fade, and with them went the constraints against self-regarding economic behavior that have ever since separated our notions of capitalism and morality (Tawney 1958).

The Calvinist influence on the creation of *Homo economicus* becomes clear in the light of the

foregoing discussion. While the *invisible hand* was never claimed by Adam Smith to be supernatural, it seemingly was capable of supernatural powers in its ability to perfectly balance the potential greed of multitudes of self-regarding individuals. The moral relationship under Adam Smith's vision of the *good* is not so much among humans, as it is in the theory of strong reciprocity between humans and a nearly god-like, invisible force of the market. That force aggregates information through prices in ways that no social mechanism ever could, or can now; see for a contemporary example Zaloom (2006). Lonely pilgrims struggle one by one under an almighty, unseen power that determines their fate in a colossal market competition of each person against herself or himself, that is, with each trying to better herself or himself. Such a moral order does not link individuals to one another in an interdependent social compact. Rather, it isolates them in a never-ending quest for competitive advancement, which eventually becomes replicated at the enterprise and societal levels, even though Adam Smith himself strove to limit sociality, and was against corporations and professional associations.

There would thus appear to be a disjuncture between the neo-classical economic morality emerging from Adam Smith's moral vision and that embedded within the model of strong reciprocity. The latter demands an other-regarding recognition of obligations among trading partners. Broadly defined, it even applies to those that one has never met before and will never meet again. And it also metes out punishment to those who fail to deliver upon their obligations and to those who do not punish the non-reciprocators, perhaps an early form of so-called *tough love*. In a sense, the 18<sup>th</sup> century English crowd was demonstrating strong reciprocity when it meted out punishment to the farmers who were withholding corn during a dearth. The chief justices and magistrates who sided with them were not simply *paternalists*, but they were upholding their part in a moral coalition to see that this punishment was delivered according to the law. The dissolution of this moral coalition was sanctioned and theorized by Adam Smith's treatise, which acknowledged a shift in the balance of powers toward the self-regarding eco-

nomic actors whose ascendancy was at the heart of the rise of capitalism. This was indeed a momentous moral shift that changed the world. Yet, perhaps the *H. economicus* brand of morality that came after the 18<sup>th</sup> century was not a theoretical finality. Instead, it may have been a transitory cultural anomaly, and with the rise of global markets we are about to witness another shift that turns once again to the strongly reciprocal forms of morality that more likely have been evident over much of human history.

### **Beyond the Protestant Ethic: Moral Sources of Competitiveness from Japanese Enterprise**

The rise of industrial Japan in the late 19<sup>th</sup> and 20<sup>th</sup> centuries presents an alternative historical perspective on moral-economy that suggests a more contemporary candidate for *moral sources of competitiveness*. The notion that modern Japanese industrial practices were in some way *moral* probably was touched off by the first systematic study of a Japanese factory published in English (Abeglen 1958). It described the *lifetime commitment* made by large Japanese corporations to their employees as a continuation of paternalistic traditions rooted in the Tokugawa merchant houses of feudal society (Dore 1973; see also Kondo 1990). The *enterprise family system* of large Japanese corporations classically has involved a distinctive suite of practices that provide long-term paternalistic care for core employees that goes far beyond what a comparable Western firm would offer (Cole 1971; Dore 1973). Characteristic elements include career-long employment; hiring directly after graduation followed by extensive, on-going training; wage scales and promotion based on seniority; twice annual bonuses; financial support for housing, and for life transitions such as weddings, childbirth, funerals; company-sponsored vacations, and so on. Such practices are represented explicitly as the company's commitment to the well-being of its core workforce, and in turn are designed to win the employees' loyalty, cooperation, and most diligent efforts. Public discourse regarding the bonds between companies and employees often is couched in moral terms of obligation and duty (see for examples Rohlen 1974, Kondo 1990). It is highly significant that major Japanese corpora-

tions have maintained their commitment to many traditional employment practices throughout and following Japan's recent and difficult recession. Such practices include employment security (i.e., career-long employment for core employees), taking job cuts from attrition or retirement, maintaining close ties to suppliers, continuing enterprise unions, even though some of these practices may have prolonged economic recovery (Jacoby 2005; Patrick Smith 2006:1). At the same time, it should be noted that Japanese firms adopted many other management practices from the West in recovering from its recession, producing a *hybrid* corporate model that reportedly has reinvigorated the profitability of the corporate sector. Among the changes made are reductions in cross-shareholdings which protected companies from hostile take-over, elimination of many "illogical" subsidiaries and subdivisions to concentrate on core businesses, greater transparency in financial accounting, reductions in overtime and twice-yearly annual bonus payments, and replacement of some full-time with contract workers (Patrick Smith 2006).

While the modern *enterprise family system* is not a direct descendant from the Tokugawa merchant houses (Dore 1973, Clark 1979), an argument can be made that this employment system nevertheless has contributed toward the development of a *moral source of competitiveness* as defined herein. As discussed below, the continuity in modern times of the Japanese employment system enables corporations to make the most of human capital in those industries in which Japanese firms dominate the world, particularly manufacturing industries. A historical case study of the transition from feudalism to capitalism in Japan provides evidence for this argument, and also is illuminating in that it reveals ways in which the moral-economy dynamic of Japan is both similar to and different from that described elsewhere in the literature.

### Historical Origins of the Japanese Enterprise Family System

In the transition to capitalism that took place after the Meiji Restoration of 1868, the new government broke-up the four classes of feudal society, that is, samurai, peasants, artisans, and merchants, named in descending order of pres-

tige. In Confucian theory, merchants were the least prestigious because by law they did not produce anything, but only traded or distributed what other classes produced, and in so doing, could become quite rich, but in a way that encouraged self-indulgence (Clark 1979). The disruption of traditional class structures was intended to encourage the formation of new industries to compete with the West. There followed a highly chaotic period of about twenty years when foreign technology and institutions were being imported and new employment relations were springing up (Dore 1973:379). Novice entrepreneurs, who were often former peasants with government connections and samurai pretensions (Clark 1979:22) were establishing or reorganizing businesses, and during this period certain sectors of the new working class came to know some of the worst excesses of the emerging capitalist labor market. For example, unsanitary living quarters for teenage farm girls working in textile mills contributed to the spread of tuberculosis, and as news of this malady traveled, it became increasingly difficult for industrialists to recruit farm workers into factories. Another particularly egregious example in the mining industry was revealed in a series of articles published in 1888 that exposed the exploitative employment relations in the *doss-house* system of indirect labor at the Takashima mining island. The indirect system of labor was common in mining, dock work, and construction that relied upon unmarried men. It used fictive kin relations whereby a so-called *father* provided food, shelter, and the opportunity to work. In return, the *father* decided what shares of income his *sons* would receive, according to how much work was done. In the case of the Takashima mining island, geographical isolation, backed-up by physical coercion and a system of permanent indebtedness, kept workers in a state of unending bondage. Examples discussed are drawn from Dore (1973:378-88).

The public was outraged by the resulting scandals. Confucian ideology forbids inhumane and degrading working conditions as immoral. In some cases, wage laborers who had been trained in the artisan tradition were not accustomed to remaining with a single employer for a long period of time, and many exercised their

option to walk out on bad working conditions, disrupting production and contributing to labor shortages. Workers also began to organize labor unions, such as the Metalworkers Union, and strikes in response to the unacceptable conditions they faced (Dore 1973).

Meanwhile, the Meiji government, ever concerned with Japan's image in the West, considered proposals for regulatory labor legislation. Ministry officials drafted factory legislation late in the 1890s, and formed a special committee to debate regulatory provisions with industrialists (see Dore 1969). The predominant opinion of the industrialists was to oppose the legislation on the basis of the *warm spirit of family harmony*, in their terms, prevailing in the factories, and the concern that European-style legislation would "destroy the fine basis of morality and trust on which good relations depended" (Dore 1973:392). In fact, while some emerging industries displayed remnants of familial arrangements, often these masked deeper forms of exploitation, as discussed above. Debate within the special committee acknowledged that large-scale corporate enterprise required new means to ensure "the fine basis of morality and trust" when employer and employee do not know one another personally. Some industrialists were willing to learn or invent new methods of industrial relations to adapt their firms to the new conditions facing Japan (Dore 1973:393).

Novel experiments with *enterprise-as-extended-family* arrangements began in the female-dominated textile industry, which had been under attack by socialists, and diffused to other industries (see for details Dore 1973:395). These new methods required many decades to diffuse, and in fact their diffusion concentrated in larger corporations, not smaller ones. Gradually, during the 20<sup>th</sup> century, the new approach and its ideology gained adherents and diffused to many other branches of industry. Over time, the modern Japanese employment system gradually came to embody an innovative *mélange* of structural ingredients. Some derived directly from Tokugawa merchant houses, others were drawn from different feudal institutions, and still others borrowed from modern European businesses or invented *de novo* in industrial Japan. They were specially crafted to solve the modern

problem of labor shortages, turnover, and labor-management strife in a complex, transitional economy (Dore 1973).

There is little doubt that the primary beneficiaries of the structural and ideological innovations were, and are, the companies themselves, via improved workforce stabilization and thus, profitability. Nevertheless, it must be acknowledged that employees also realized significant gains through enhancements in their working conditions and overall compensatory rewards, and through larger benefits to the Japanese economy. After World War II, the Japanese employment system became associated with a highly competitive economic development model that combined public (government) policy with private (corporate) strategy. Long hours of hard work and income savings by the Japanese people, resulted in a much improved standard of living within a relatively short period of time. For example, the average salaried worker in the nation's largest 155 companies reported income doubling from 1966 to 1969; as one result, 85% of all families owned refrigerators in 1969, compared with only 35% in 1964 (Rohlen 1974:11). At the time, Japan's economic development model was viewed as highly successful, and began to be emulated by nations throughout Southeast Asia (Yergin and Stanislaw 1998).

The employment system was not equally beneficial for all workers, however. Flexibility was preserved through a two-tiered labor structure of permanent and temporary employees that has been preserved and even strengthened to this day. Career-long employment guarantees are in place for the elite core of permanent workers, but no such security for contingent workers exists, who could be released during downturns, as might employees in smaller firms, or female employees (Hamada 2004). Yet, even temporary workers in small firms realized some of the gains achieved by the Japanese employment system; for example, the part-time artisans in the small confectionery shop studied by Kondo came to view paternalistic care and benefits such as company trips as their *right* (1990:202-204).

### The Moral Economy of Japan

Religious ideology had a significant role in shaping the outcomes of the capitalist transition

toward the specific social forms that are represented in the Japanese employment system. As Dore explains:

...the modified Confucian world-view which prevailed in late nineteenth-century Japan assumed original virtue rather than original sin. Confucianists in positions of authority... have been less predisposed than their Western counterparts to see their subordinates as donkeys responsive to sticks and carrots, and more disposed to see them as human beings responsive to moral appeals. Japanese industrialists' view of man...made them believe in the efficiency of benevolence in evoking loyalty, and of trust in evoking responsibility. This clearly, for any given set of objectives, predisposed them to certain choices of means rather than others (Dore 1973:401-402).

The *moral* cast of Japanese enterprise via its negotiated *familial* arrangements at the turn of the 20<sup>th</sup> century was not only a defensive reaction on the part of industrialists eager to ward off restrictive labor legislation. But also it was a conscious strategy adopted by the Meiji government to reform the morally inferior image of the former merchant class. It served to endow them with moral superiority within the context of neo-Confucian ethical sensibilities (Clark 1979). This could be done only if the business leadership accepted a role that extended beyond the self-interest of individual enterprises and came to embrace the interests of the nation as a whole. Business elites do not appear to have been reluctant to assume this role, and indeed some may have enthusiastically embraced the notion that their firms embodied the ancient social form of the Japanese *ie* (or household) and relished the idea that the continuity of their firm was analogous to the reproduction of a Japanese household over time. This conceit could reflect a novel and powerful means of social integration and identity that would represent a competitive advantage over Western firms with their individualistic modes of social control (Hamada 2004:129). Here, the distinctive moral economy of Japanese corporations are shown to be historically rooted and deeply contextualized, while also reflecting the highly rational and calculated

strategies of their founders and management agents.

Strong resonance between conceptions of morality, economy, and political leadership may be traced to the Tokugawa era, where their intersection was facilitated through notions of the divine that derive from neo-Confucian, Buddhist and Shinto influences. Bellah discusses these ideas at length in his classic Weberian analysis *Tokugawa Religion: The Cultural Roots of Modern Japan* (1985, 1957 original edition). Bellah (1985:59-77) identifies two basic constructions of the divine in Japanese religious ideology, each with a significant presence in the Japanese moral-economy. The first conception is that of a beneficent, super-ordinate being or entity who dispenses care and nurture to whom recipients owe a debt of *on*, which is a sense of indebtedness by a subordinate for favors bestowed by a superior (Cole 1971:202) for their blessings. Such debts can never be repaid due to the superior's higher status. This leads to a requirement for unending performance in the service of one's collective, which ultimately is tied to a sacred purpose. The second conception is that of the *ground of being*, or the *inner essence of reality* (Bellah 1985) of which the seeker desires to gain knowledge and/or identification or unity. Religious action leads the seeker toward ethical works or other types of experiences that display meaningful selflessness and devotion to others, that is, toward unity or identification with the *ground of being*. These two interrelated constructions guide the religious practitioner to conduct his or her relationships with others in a manner that both (1) fulfills the responsibilities of *on* external to the self and (2) that explores the relationship with the self as the internal quest for knowledge. Simultaneously all the while the requirements of a moral person in a social context should be fulfilled.

Both leaders and members of groups were expected to conform to these moral codes, to a greater or lesser degree, depending upon their occupational status. In the Tokugawa era, the Bushido or samurai ethical code placed the greatest burden of conformity on samurai houses. Such moral values penetrated all of the important polities within Japanese society, including the family, the territorial units such as the village, the commercial houses, meaning

businesses, and the state. Integration of these units was achieved through the notion that all family units were branches from an ancestral lineage, of which the Imperial family was the main house. According to Bellah (1985:103), God, emperor, lord and father were all of one lineage, and the whole nation could be viewed as a single family. The family did not serve as the locus for an opposing set of values; rather, the family was integrated into the overarching values that served the national polity, with filial piety taking second place behind loyalty and service to the emperor. The concept of *kokutai* suggests a nation state in which religious, political and family ideals are merged together, and *on* obligations to the emperor take precedence. Bellah (1985) and others (Rohlen 1974; Clark 1979; Kondo 1990, Rhody and Tang 1995) have made a case for the continuing influence of these ideological forces in modern Japanese business. Several relevant observations may be derived from this discussion.

First of all, the Japanese case parallels the existing moral economy literature in some respects, yet diverges from it in others. The transition from feudalism to capitalism in Japan, as in other places, resulted in severe social dislocation that brought harm to many and violated past understandings about what separated legitimate from illegitimate economic practice. In early capitalist Japan, as in 18<sup>th</sup> century England and 20<sup>th</sup> century Malaysia, moral outrage was the result when a past moral code regarding legitimate employment practices was violated; Confucian ethics proscribed inhumane working conditions. In the Japanese case, however, moral outrage catalyzed a social process through which the aggravating parties, that is, the new entrepreneurs were pressured by a moral coalition. The consensus was rooted in the past. It tended toward a reconsideration of their actions, and a gradual modification of employment practices in large firms toward a form more in keeping with societal expectations. The outcome was the invention of a new set of practices that incorporated past moral intentions, if not identical forms, within a new economic and social context. From this complex process, a novel moral-economic assemblage emerged—the Japanese employment system—that brought benefits to a

large sector of the population, not equally to everyone, however. A shared history—and more importantly, a broad social consensus on moral standards rooted in this history—may have served as a kind of platform or template for the assemblage of elements from varying sources that together would meet the requisite standards well enough to quiet the critics and satisfy the angry workers.

Another observation concerns the nature of the coalition that brought pressure to bear on industrialists. This coalition emerged from three other sectors of society, led by the state, which had traditionally held the highest moral authority. The coalition included the *Meiji government* with its concerns about Japan's image in the West and its threats of impending legislation. It included the *public or civil society* with demands for labor legislation. That was upon discovery of exploitative working conditions through journalistic accounts. And it included the *wage laborers* with their refusal to be employed under inhumane conditions, their tradition of walking off the job and holding strikes, and the formation of unions. The basis for the moral consensus held by this coalition derived from the Tokugawa era but continued into the Meiji period. Leaders, and this now included industrialists, had a sacred duty to serve society through the performance of unending service, in this case, to the nation, which meant, in part, a display of meaningful selflessness and devotion to others, including their employees. To gain legitimacy and respect as key figures in society, the new Japanese entrepreneurs had to have more than power and wealth. They had to gain legitimacy by aligning themselves around the same moral vision as the nation state and the civil society by displaying their concern and regard for the workforce upon whose labor and skills they depended (Clark 1979).

A further point relates to the specific social and economic practices needed to solve the problems of industrial capitalist production in the post-Meiji era. While these clearly differed from the production and distribution practices of feudalism, the *familistic* idiom which blanketed the economic realm in Japan for centuries and was successful in surviving the transition from feudalism and capitalism is not just any cobbled



pastiche, nor is it merely a government public relations scheme. Rather, *familism* is a contextually-situated idiom that grows out of historically and socially-sanctioned moral concepts and principles related to the *continuity of politics* considered fundamental to Japanese society (Bellah 1985). The rise of the Meiji era made large industrial corporations central to Japan's future as a world economic power and to its national security. The stable employment of a core workforce for these corporations was vital to the strategic interests of both corporations and the state (Clark 1979). Labor strife and the resulting disruption of operations would not make Japan a world class power, and at that point in time Japan probably did not possess the military fire power (or political will) needed to quell labor uprisings. A family-like (non-contractual) bond between large corporations and their core employees was considered to be the most effective and efficient means (Dore 1973) to bind labor and capital to each other, and thus to ensure a convergence of interests and mutual prosperity. As a guiding metaphor for social organization, the Japanese stem family or *ie* (household) has many advantages in a capitalist context, not the least of which include the vertical organization of authority, and collective responsibility for the long-term continuity of the whole. These advantages were not lost on Japanese entrepreneurs, who may have over-emphasized their presence even beyond what was justified (see Kondo 1990; Hamada 2004). On the surface, and from a Western perspective, it would appear that the *enterprise family* is an emergent moral-economy assemblage. The enterprise represents the economy; as one manages a household, so one must manage an enterprise. Moral values, on the other hand, would seem to derive from the relationships within the family. At least, this is how the assemblage has been considered in the literature.

It is important to recognize, however, and this is a key point, that in Japan, if there is a *thumb on the scales* of the moral-economy equation, it tips the balance toward the *enterprise* side of the interaction, not that of individual family members or their relationships. The appropriation of family-like relationships by modern Japanese industry is a means to ensure *enterprise*

*continuity*; that is, the family, real or fictive, serves as a mechanism to accommodate the needs of the enterprise, not the other way around. Morally speaking, what is *right* is to ensure that the enterprise as the household, the *ie*, the economic dimension survives; individual family members may be of lesser importance, relatively speaking. Relationships among family members serve the higher purpose of the enterprise. So, one might say that what we have is an economic morality, rather than a moral economy. Individual family members' interests may be taken into account, but enterprise fortunes more often are the primary consideration. This is quite a different kind of *enterprise familism* than that in which the enterprise is maneuvered as a vehicle for family fortunes. See, for example, Ferkany's (1992) discussion of family-owned business in Mexico.

Japanese-style *enterprise familism* was a long-standing tradition among the Tokugawa merchant houses of feudal society (Dore 1973; Clark 1979; Kondo 1990). The traditional Tokugawa merchant house was open to the incorporation of non-kin members through several mechanisms. For example, loyal and trustworthy apprentices could become heads of branch businesses, non-kin could marry in as *adopted husbands*, if such fictive kin were capable of bringing continuity to the enterprise through competent performance that could ensure a strong successor generation to lead the firm in the future. These mechanisms continued to be employed after the Meiji Restoration, as is clear from an important example of *enterprise familism* found in one of Japan's most successful modern firms, the Toyota Motor Corporation. See detail in Box One. In this Toyota narrative, a father maneuvers family members to ensure a strong future for his company, but in the process, he must *disinherit* his eldest son, not because his son had *behaved dishonorably* or made any other false moves per se, but because the company's fortunes rested upon selection of the strongest possible president for future leadership, and this might not be the son by birth. The Toyota narrative underscores the way in which morality, what is *right*, is linked to the interests of the *enterprise*, or economy, as defined by its leadership, not to the interests of individual family members, as might be assumed in a Western context. The meaning of *enterprise*



*familism* in historic Japanese practice thus conceptually reverses our notion that morality should be linked to family relationships within the enterprise. Even real, or genetic, family members may be passed over for leadership if that is deemed necessary to provide a better chance for a company to continue and thrive over the long term. (See Box One.)

The morality at the core of these *familistic* relationships is one that bespeaks an obligation to do what is best for the larger collective of others beyond the self, that is, those in one's group but beyond one's own genetic offspring and others forward and backward in time. *Enterprise familism* does not mean that real or imaginary family members always are treated in a *moral* way, with *moral* defined in terms we would approve, such as by recognizing their individual rights or giving them a say in the matter. Rather, *enterprise familism* means that real and fictive kin are bound to the firm through webs of obligation and indebtedness that are strong enough to guarantee that they will do *whatever* is required, no matter how difficult, painful, or unpleasant, to ensure the firm's continuity and prosperity over time. This is so even if this means individual sacrifice or the sacrifice of individuals. Sometimes, the sacrifices that are required of real and fictive kin do not seem *good* or *right* at all, as when the eldest Toyoda son was *disinherited* and displaced by a business partner. But the son accepted his fate and continued to work loyally for the family firm, even at a task he did not relish. As a result, the larger enterprise was served well in Japanese moral terms, and the son was not forgotten. Indeed, and maybe this is the "moral" of the story, the son's contribution was all the more significant over the long term; see Kamata (1982) for other examples of *not so nice* sacrifices at Toyota.

The historical perspective gained through examination of the Toyota case provides another vantage point for considering the situation presented in Kondo's (1990) case study of a small confectionery shop in modern Tokyo. In Kondo's study, the family idiom of the firm is fractured by a clear division between the company's owner and his family, who are in a central position of authority and privilege, and the part-time artisans, who are economically and politically mar-

ginalized. The Toyota case, positioned closer in time to the transition from feudalism but still within the capitalist era, shows that *family* is not always a monolithic entity, nor are its genetic members' interests always foremost when an enterprise's future is at stake. Rather, family itself may be fractured to promote the interests of a higher polity, that is, the enterprise.

To be clear about power, the social and economic structures that grow up within the ideological and moral contexts in Japan fashion a consensus. The requisite consent integral to it leans toward the interests of the enterprise and its management and the nation state with power vested in the polity (Bellah 1985). As described in the Toyota case of Box One, individuals may be accommodated within the moral framework, but they are not necessarily privileged in this process. Decision-making is top-down, from the head of the polity as a means to represent its interests foremost, although the desires of other constituents are taken into account. Nevertheless, as Cole (1971) notes, the historical context of industrialization in Japan tended to foster more cooperative and consensual relationships between workers and management here than elsewhere in the industrialized world. Cole (1971) contrasts the contexts of early industrialization in Japan with those of England, underscoring the contrasts in moral-economy dynamics experienced in each place. In Japan, Meiji industrialists embraced their role as contributing to the future prosperity of the empire, while Japanese workers and families of that era viewed their relocation to industrial sites as opportunities for achieving individual and family success. A popular slogan of the time was "make something of yourself" or *risshin shusse* (Cole 1971:174; see also Toyota 1988). The Japanese sense of stalwart advancement into an industrial frontier is in striking opposition to that portrayed by E. P. Thompson (1963) for the early English working class at the dawn of industrialization. In England, industrialization was achieved through the force of violence and the law, as British rulers coerced rural peoples off their farm lands and into the cities and factories, using legal means such as the Enclosure Laws and Poor Laws, or violent action, if necessary (Cole 1971:174-75). The rise of industrialization in England thus was associated more

directly with the superior will of a “master” class (Thompson 1963; Cole 1971:175), while in Japan it was a national project with collective participation and support, albeit still directed from on-high. These differences may, in turn, help to explain tendencies toward greater cooperation between management and the workforce, and worker compliance, in Japanese industry, although that is not the whole story, as will become evident.

### Japanese Enterprise and Strong Reciprocity

Although the early Japanese industrialists may have agreed privately with Adam Smith that self-interest for them personally was the driving force behind the rise of industrial Japan, *Homo economicus* was not prominently featured in the Japanese moral vision depicted above, and neither was the *invisible hand*. *H. economicus*-type behavior indeed was suspected of individual business leaders in Japan, and no doubt it was a factor since the Tokugawa era (Clark 1979; Bellah 1985). However, significant portions of society were pushing and tugging in an opposing direction, which had a mitigating influence. This moral-economy dynamic appears somewhat distinctive in comparison to that described by Thompson (1971) in England after the 18<sup>th</sup> century, and even that explored by Scott (1985) after the green revolution in Malaysia. As for the *invisible hand*, Japanese businesses must compete in the same global marketplace as Western firms, but the Meiji government sought to guide and abet its private sector allies with a hand that was quite visible. It was expected within the neo-Confucian ethic, and external military enemies enabled this tendency (see Yergin and Stanislaw 1998).

A pattern of *on* obligations – meaning a sense of indebtedness by a subordinate for favors bestowed by a superior (Cole 1971:202) over multiple generations, stretching both forwards and backwards in time – may be compared with the notion of *strong reciprocity* presented earlier in this article. Please recall that *strong reciprocity* is defined as

a predisposition to cooperate with others,  
and to punish (at personal cost, if necessary)

those who violate the norms of cooperation, even when it is implausible to expect that these costs will be recovered at a later date (Gintis et al. 2005:8).

It could be argued that *enterprise familism* establishes a moral regime that in operational terms is not dissimilar to that of strong reciprocity. Cooperation amongst actors is encouraged by the need to respect obligations that have been incurred in the past, or are anticipated going forward. Future time scales and the need for repayment are constantly borne in mind, given the long term perspective that is inherent to *on* obligations, and the notion of enterprise continuity over time. Another example drawn from the history of the Toyota Motor Corporation shows how strong reciprocity may be constructed within a Japanese enterprise, and how this construct is related to the institutionalization of the Japanese employment system. See details in Box Two.

The example in Box Two describes the resignation of Toyota's president, Kiichiro Toyoda, from the company as a means of signaling and accepting management's responsibility for the failure of the firm to honor its previous commitment to its employees not to dismiss them in exchange for a wage reduction. In other words, he symbolically punished or sacrificed himself, so that his company would not be further harmed by a difficult financial situation and could move forward. This resignation was not only symbolic. Kiichiro Toyoda never returned to management of Toyota, and he died two years afterwards on March 27, 1952, at the age of 57, following treatment for high blood pressure (Toyota 1988:115). The history of the Toyota Motor Corporation embeds additional illustrations of this pattern. For example, President Risaburo Toyoda resigned from Toyota after World War II to help dissociate the company from its dishonored wartime activities (see Toyota 1988). These are instances in which the head of a polity takes responsibility for a failure of cooperation, either breaking a promise to employees in the case of Kiichiro or collaborating with the wrong side in the case of Risaburo. The head commits an act of *self-punishment* or sacrifice on behalf of the polity to enable the

remainder of the collective to survive. Continuity of the polity is a central value in Japan (Bellah 1985; Kondo 1990), and the head of the polity is the main power figure with decision-making authority. So these acts of self-sacrifice may be viewed as the ultimate form of strong reciprocity—a voluntary “death” enabling continuity of the enterprise under new leadership, and an opportunity for adaptation to changing conditions. The voluntary “death” may be analogous to inclusive fitness where one individual sacrifices herself or himself so that fictive kin survive, and the organizational culture that gave rise to such an unselfish act continues to be propagated. Just as allele-sharing kin would survive in the case of inclusive fitness, this intriguing form of organizational renewal might represent a novel approach to change, but it could be quite difficult to implant within more self-regarding enterprises.

### **The Moral Economy of Lean Manufacturing**

The case study of Toyota Motor Corporation discussed above has implications for anthropological practice in global manufacturing corporations today. Toyota pioneered the production methodology that has become a global standard for low cost, high quality manufacturing, known in the West as *lean manufacturing*. This production regimen has been adapted by companies around the globe, including not only those in the automobile industry, but in office equipment, consumer and industrial electronics, tires, and many service industries as well (Liker et al. 1999; Liker 2004; Swank 2003). The classic Japanese employment system described previously was integral to the development of lean manufacturing at Toyota and its adoption at other Japanese firms, where human capital is engaged in distinctive ways to identify and exploit opportunities for improvements in the manufacturing process (Pil and MacDuffie 1999).

The remainder of this essay will argue that lean manufacturing in its original form is a specific moral-economy phenomenon developed at Toyota, made possible by Toyota’s strong reciprocity heritage. The core of this argument rests on the idea that the advantages of the manufacturing methodology developed at Toyota are

grounded in a specific articulation of morality and economy that is unique to Toyota. This moral source of competitiveness continues to demand much from individuals, but also offers certain forms of protection to those individuals and confers upon them compensatory benefits that are not available in traditional American manufacturing systems. When the lean manufacturing methodology diffuses across national boundaries into an American-owned company, for example, the moral-economy articulation also is transformed as a result of differences in the history, institutional economics, and power relations found in a foreign manufacturing context. The diffused methodology may remain a powerful manufacturing tool, but there also are unanticipated consequences and divergent results for key groups of stakeholders, especially production workers.

### **Fundamental Concepts of Lean Manufacturing at Toyota**

Interest in lean manufacturing methods in the United States may be traced to the publication of an MIT-based study (Massachusetts Institute of Technology) by the International Motor Vehicle Program (IMVP; Womack et al., 1990) comparing productivity and quality outcomes across automobile manufacturing plants in Europe, Japan, and North America. A key finding was that certain Japanese-owned automobile manufacturing companies, not all, and their international transplants (including those in the United States, employing American workers), were capable of producing significantly more cars per labor hour on average, with substantially fewer quality defects per vehicle, than other plants owned by American or European firms. In a follow-up study by Pil and MacDuffie (1999), the gaps between Japanese-owned plants and transplants on the one hand, and American-owned plants on the other, persisted. The former could produce a vehicle with an average of 16.2 and 17.3 labor hours per vehicle, respectively, while the latter required 21.9 labor hours. With respect to quality, vehicles from Japanese plants and transplants had an average of 52 and 48 defects per 100 vehicles, respectively, while 100 vehicles from American plants averaged 71 defects (Pil and MacDuffie 1999:63-64).

The IMVP (Womack et al. 1990) attributed the performance outcomes of certain Japanese plants and transplants to a suite of manufacturing practices that they defined as *lean production* (also known as *lean manufacturing*). This approach is a complex and multidimensional way of making goods that includes specific shop floor practices, vehicle designs that enhance manufacturability, timely coordination of the supply chain, close working relationships with customers, and highly disciplined management of the entire enterprise. In their description of lean production, the IMVP authors (Womack et al., 1990) drew upon previously published work detailing the Toyota Production System (see Cusumano 1985), which was the original template for this innovative manufacturing methodology. The Toyota Motor Corporation developed the Toyota Production System, or TPS, over a fifteen year period during the 1950s and 1960s, in efforts led by Taiichi Ohno, an ingenious Toyota engineer without a college education. TPS initially was aimed at eliminating waste, but in the process of achieving this goal, lean methods also discover and eliminate quality defects. Inset Box Three describes the invention of lean production at Toyota, and some of its consequences for production workers. (See Box Three)

In one of the first efforts to describe TPS to the English-speaking world, a group of Toyota employees published a journal article that characterized TPS as a production methodology with two basic concepts:

- 1) the reduction of cost through the elimination of waste; and
- 2) making full use of human capability (Sugimori et al. 1977).

Discussion of the first concept indicated that “anything other than the minimum amount of equipment, material, parts, and workers (worker time) which are absolutely essential to production are merely surplus that only raises the cost”; the second concept was elaborated as “treat[ing] the workers as human beings with consideration. Build up a system that will allow the workers to display their full capabilities by themselves” (Sugimori et al. 1977:554).

The two basic concepts noted above provide a concise introduction to what is perhaps the most

fundamental moral-economy phenomenon embedded within lean manufacturing. The moral-economy phenomenon in question concerns the way in which the enterprise realizes economic advantage or competitiveness, on the one hand, and relations between the enterprise and production workers that make this competitiveness possible, on the other. The excerpt from Sugimori et al. (1977) suggests that the two basic concepts of TPS, that is, reduce costs by eliminating waste and make full use of human capabilities, have always been linked together in a sort of balanced socio-technical system that works as a whole to create Toyota's results. It is more accurate, however, to regard these two concepts as the result of a lengthy, halting, dialectical process involving political struggles inside Toyota and between Toyota and its domestic rivals, which only produced TPS after a great deal of internal negotiation and structural re-ordering. Exploring the emergence of these two concepts reveals the way in which the unique features of Toyota's moral economy have been embedded within the Toyota Production System.

We begin from the backdrop of severe resource scarcity in Japan following World War II when the Toyota Motor Corporation found itself in dire straits (see Box Two). Management formulated a five year plan for economic recovery, and Taiichi Ohno became a key actor in this plan by convincing senior executives that he could raise productivity while decreasing costs (Cusumano, 1985). Ohno's initial methods for accomplishing this feat relied upon cost reduction through the elimination of waste, methods we associate with the *standardization of work*. The standardization of work is a means to decrease the non-value added components of time, materials, equipment, parts and workers involved in a manufacturing process – essentially, a process of capitalist rationalization. Because these methods required what were essentially craft workers to operate more than one machine at a time (discussed in Box Three), they provoked resistance from the shop floor (Ohno 1988). Based on Ohno's discussion of this period and his responses, it is reasonable to conclude that workers were asking questions such as the following: How could a craftsman attend multiple machines when he only had the requisite skills to

operate one type of machine? What were the safety implications of these changes? Who would decide how fast the machines should run, and who would control the speed? These questions incorporate a moral component, since they are grounded in local constructions of what is *good* or *bad* and *right* or *wrong* in specific shop floor practices. At Toyota, such questions must have taken on a particular sense of urgency, given what we know of the firm's history. The narrative in Box One reveals that any person may be asked to sacrifice his or her own best prospects for the continuity of the enterprise. Historically, this included members of the Toyoda family. It is plausible to argue that this ethic of sacrifice carried over into the lean manufacturing environment as well.

Ohno's experiments with lean manufacturing were caught up in a period of political and economic turbulence that also had a transformative effect upon Toyota's employment relations system. Between 1947 and 1950, Ohno faced strong resistance from the workforce and a militant union. Yet, it appears that he pushed through his methodological changes despite workforce objections. During this time, however, workers had disincentives to resist his changes to the point where they risked their jobs, given high unemployment and Toyota's isolated rural location. After the 1950 strike, when Toyota agreed to give remaining workers career-long employment guarantees and the union became more cooperative, Ohno began to accommodate workers' concerns by making additional technological modifications to equipment patterned after those he discovered at Sakichi Toyoda's loom factory. These accommodations ensured greater safety and reduced the level of stress caused when workers' operate multiple machines. This approach evolved to become a Toyota signature program with its own hallmark—*jidoka*, or *automation with a human touch* (Ohno 1988).

In 1950, Ohno also originated the stop-line order, whereby a single production worker can stop a moving assembly line, with significant potential costs per stop, if the worker detects a manufacturing problem or a shortage of parts. The stop-line concept has been structured into the technology of every Toyota assembly plant throughout the world through the *andon* system.

An electronic bulletin board signals a so-called trouble location. Every worker has access to this system through a button situated at his or her work station, although some managers in overseas plants have not allowed workers to use the system (Fackler 2007). The stop-line concept not only gives workers more authority in the production process, but also recognizes workers' intellectual contributions as they detect and signal manufacturing problems, transforming workers from mere physical appendages of machines to knowledgeable agents.

The stop-line order was a significant development, for it marked the emergence of the second basic concept of the Toyota Production System -- to make full use of human capabilities. This second concept may be thought of as a negotiated response to the first basic concept of reducing costs by eliminating waste. It may be considered a reflection of workers' agency in resistance to Ohno's original conception of lean methods, and his own agency in response to them, based upon his class background and industry experience. Ceding authority to workers came only after the emergence of the core worker concept and the establishment of cooperative labor-management relations, not before. Thus, TPS should not be thought of strictly as a *hegemonic* system that represents only managerial or corporate interests (Babson 1995; Burawoy 1979) because it also embeds important elements that may be traced to the moral reasoning of the Japanese working class. Involved, for example, are safety and security in the conduct of work and application of local knowledge and responsibility to improve the way work is done. From this historical perspective, it is possible to see that TPS began to encode within its technological framework the structural elements of a class accord or consensual agreement after the watershed events of 1950, during which Toyota adopted the Japanese employment system.

A later development at Toyota intensified the *conceptual engagement* of the workforce in manufacturing process improvements. Conceptual engagement is made possible by the division of labor in Japanese industry, which reflects the resource scarcity of the post-war period. Due to resource scarcity, many firms consciously embedded within the production workforce the knowl-

edge and skills of industrial engineering and skilled trades, rather than relying upon separate departments for these capabilities (Nakamura et al. 1999). Based upon this foundation, Toyota initiated its *Quality Control* (QC) circle program in 1963, the first of its kind in the industry, as part of an effort to overtake Nissan, its domestic arch-rival, which had won the Deming Prize for quality in 1960. Post-World War II Japan was the venue for development of what later became known as the *Total Quality Control* movement. This philosophy and methodology of business management infuses the entire enterprise with an integrated emphasis on customer satisfaction and quality processes and practices in distinction to the traditional American approach to quality of focusing more narrowly on post-manufacturing inspections and statistical sampling of lots (Cusumano 1985). W. Edwards Deming (1900-1993) was an American statistician who had helped to found the Total Quality Control movement in Japan, and the Deming Prize recognized Japanese companies that made exceptional advances in the implementation of Total Quality practices. In a QC circle, a small group of production workers and a supervisor tackle specific manufacturing problems, using some basic tools of quality control, and other methods of industrial engineering. While management provides the overall goals or themes for the QC circles, the workers and supervisors do the conceptual and technical problem solving themselves. QC circles have been credited with many small but significant improvements in Japanese manufacturing processes that together account for an innovative approach to technological change known as *kaizen* or *continuous improvement* (Winter 1990; Cole and Mogab 1995).

Later on, Toyota merged its suggestion system with the QC circles, and invigorated the former by setting quotas for suggestions, keeping records of who submitted suggestions, and using these records to determine bonuses. Awards were given for suggestions, and supervisors criticized those who failed to contribute. During one press by Toyota management in the early 1980s, workers responded favorably and doubled the number of suggestions submitted between 1980 and 1982 from 850,000 to 1,900,000. The percentage of suggestions accepted by management at this

time was 94-95%. The material in this paragraph is drawn from Cusumano (1985:351-359).

Although Toyota's moral system historically requested sacrifices from individuals for the *good* of the enterprise, the enterprise itself in its corporate sense came to realize that production workers had more to offer than physical assets; they had intellectual assets as well. There was nothing sentimental about this realization or the way it was implemented. The objective was not to *treat workers nicely*. Conceptual engagement of production workers was found to be in the best interests of the enterprise, which means that it was deemed to be *good* for Toyota in locally constructed terms. Importantly, the powerful hierarchy that controlled Toyota did not use TPS to crush the workforce, as could have happened if only the first basic concept were implemented, without any so-called humanistic accommodations. Rather, the hierarchy accorded the incorporation of technological and structural mechanisms to support, protect, and intellectually enrich the workforce within a moral framework that defined the *good* as that which promotes the continuity of the enterprise. Such a move was strategic in fulfilling TPS's first basic concept of reducing costs through the elimination of waste. It was recognized that the first goal may be achieved by mechanisms beyond the standardization or rationalization of work, or that this first method has diminishing returns where humans are concerned.

It is hypothesized that conceptual engagement can provide a degree of protection for core workers from the relentless physical onslaught of increasingly rationalized work that often accompanies lean methods, and also can offer some compensatory benefits through mental stimulation and the possibility of creativity. Conceptual engagement can provide a physical break; for example, when a worker activates the *andon* system to stop the moving assembly line and workers engage in trouble-shooting. Opportunities for creativity are provided through technical problem solving in QC circles. Ironically, one piece of evidence that pulling an *andon* cord provides physical relief comes from troubled lean manufacturing plants in the United States. There, disgruntled workers may pull the cords when their teams fell behind in their work or



they want to protest against the rapid pace of production (Graham 1995; Vallas 2006b).

### **Lean Manufacturing and Strong Reciprocity**

The manufacturing methodology and labor relations regime developed at Toyota is resonant in several important respects with the strong reciprocity construct described earlier in this essay. At the heart of this manufacturing method is a governance system that reflects non-antagonistic principles, and a propensity to cooperate and/or consent, which is a class "accord" in the words of Price (1995:102), among the management representatives of the enterprise, the core workforce, and the union. At the base of this governance model is the unique Japanese employment system discussed earlier in this article. Since 1950, Toyota Motor Corporation has offered its core workers career-long employment, not based on a legal contract, but rather on trust. This employment assurance has lasted through many economic downturns, including the most recent severe recession in Japan. As a reciprocal obligation, the workers offer Toyota their commitment, or at least their consent, to do whatever needs to be done to support the continuity of the enterprise over the long term. We may not know what each individual employee is feeling while he or she is consenting, perhaps happy, indifferent, or hostile. But we do know that the performance of Toyota has been sufficient to put that company on track to become the number one automobile manufacturer in the world within the near future, with more of its vehicles recommended by *Consumer Reports* than any other carmaker (this despite some recent recalls due to over-extension of new products and production outside Japan; *The Economist* 2007).

The *sine qua non* of strong reciprocity is punishment for failure to cooperate, and in an organization, perhaps the reverse of un-punishment or positive incentives for those who choose to cooperate well. Both are in evidence. The most dissident unionists were expelled, while those less strident were brought into management. Temporary workers who do not show sufficient cooperation and/or consent are not brought into the core. Those brought into the core receive

career-long employment. When the suggestion system was merged with the QC circles, supervisors criticized those who failed to contribute suggestions, while contributors received bonuses. People also self-sacrifice on a more or less voluntary basis; nearly everyone is expected to make sacrifices for the enterprise. The specifics are contingent upon one's position in the hierarchy. Ironically, a president may need to resign, while a temporary worker has to soldier on so to speak, and most do not quit when the going gets tough (see Box Three). This moral milieu provides the historical context in which lean manufacturing originated and has been sustained over many decades.

### **Lean Manufacturing in the American Context**

On the whole, diffusion of lean manufacturing methodology to North America has met with mixed results. In the automobile industry, there is little doubt that lean manufacturing practices are correlated positively with improvements in productivity and quality. The American Big Three automakers are closing the gap with Japanese competitors, although the gap persists (Pil and MacDuffie 1999; Gettelfinger 2007). Yet, there have been reports of trouble, some of it serious. A number of lean manufacturing plants in the North American automobile and other industries have failed in a human sense. There were unanticipated strikes, and some disaffected work groups openly resisted and contested managements' efforts to build a cooperative or consensual governance model (see Fucini and Fucini 1990; Babson 1995; Graham 1995; Rinehart et al. 1997; Vallas 2006a).

The mixed economic results and human troubles of lean methods have stimulated an intense debate in the social science literature regarding the long-term implications of lean manufacturing for American industry and its workforce (see Vallas 2006b). Proponents argue that lean manufacturing represents an opportunity for the revitalization of American manufacturing to deliver not only enhanced productivity and quality, but also to offer production workers the chance to develop new knowledge and skills. Workers have the opportunity to play a more engaged role as self-directed managers of their



own work processes with greater autonomy and less alienation and boredom (see Adler 1999; Vallas 2006b). Critics, on the other hand, claim that new human-resource management practices often accompanying lean manufacturing approaches (e.g., teamwork, job rotation, and enhanced training) are managerial constructs cloaked in moral language to disguise a subtle and pernicious regime in which workers monitor and police each other through new lateral structures of coercion (Babson 1995). Meanwhile, the pace of work is intensified through *management by stress*, a process in which the technical core of lean production eliminates all waste, including rest time and extra workers, making work more difficult, arduous, and prone to causing injuries (Parker and Slaughter 1995). This debate seems to have arrived at a stalemate (Vicki Smith 2006). On the one hand, the performance improvements of lean manufacturing are difficult to deny as the hard reality of global competition requires leaner plants. On the other hand, lean manufacturing appears to result in harsher conditions for production workers, a result that leaves many academics in an intellectual and moral quandary. Lean can neither be affirmed nor denied, characterized by a question that remains unspoken: Why cannot American-owned plants implement lean manufacturing in a more humane manner? Or why does *lean* have to be so *mean*?

One partial answer to this question may be found in the processes by which lean manufacturing has diffused to American manufacturing contexts. Re-contextualization (Brannen et al. 1999) of lean methods requires serious attention to the issue of labor-management relationships. The TPS approach to lean manufacturing embeds cooperation, or at least consent, between management and production workers such as involvement in decision-making and stop-line authority. Yet, antagonistic governance models often characterize American manufacturing environments, creating persistent challenges for the diffusion of lean methodology (Babson 1995). Thus, many American firms interested in implementing lean manufacturing have devised *participatory* management structures in the hope of increasing the commitment or at least gaining the consent of production workers as lean meth-

odology is introduced. There is a modest consensus across the literature that workers are more enthusiastic and committed when management focuses serious attention on them, and recognizes them as agents with their own interests (Hodson 2001). Yet, the nature of pre-existing worker-manager relationships in a firm is highly salient with respect to such participation, and it can be difficult to change these relationships in a “brown-field” site, meaning an older manufacturing site with pre-existing management and workforce. Therefore, when an American firm is committed to worker participation, the firm is quite likely to implement the project in a “green-field” site, that is, a new plant with all new personnel or as a joint venture with a Japanese partner.

Now, nearly two decades after publication of the IMVP study, it is possible to examine the results of several natural experiments in which many American firms appear to have successfully embraced at least the first basic concept of TPS. That is, they have implemented methods associated with the standardization of work, thereby *reducing costs through the elimination of waste*, with the emphasis on cost reduction. As Ron Gettelfinger, president of the United Automobile Workers, noted recently in the Harbour Report, American automobile manufacturing plants are performing well. This report measures manufacturing efficiency (Gettelfinger 2007). Efficiency is the traditional standard of performance for American manufacturing—how much output in terms of vehicles can be produced per unit of input such as labor. Certain lean manufacturing practices, such as those that help to reduce costs by cutting the number of workers or other inputs required to produce a vehicle, improve efficiency measures. But not all of these plants are doing equally well per the J.D. Power and Associates Report, which measures quality (J.D. Power and Associates 2007; to view results from J.D. Power and Associates most recent initial quality study for new automobiles go to <http://www.jdpower.com/autos/quality-ratings>). To improve on manufacturing quality is not as easy as improving efficiency. Quality is a more difficult performance metric because it is not accomplished only by taking costs out of the process. Quality requires the additional investment of intelligence, knowledge applied to the elimination of

manufacturing defects. Such investment involves the second basic concept of TPS, making full use of human capability. There are several interrelated problems involved in the implementation of the second basic concept of TPS in American-owned plants that may weaken or even eliminate the second basic concept. These problems relate to the legacy institutions of the 20<sup>th</sup> century manufacturing in the United States.

First, there are the contextual difficulties of the division of labor in American industry. Unlike Japan, the division of labor in American manufacturing is such that production workers, and now even skilled trades, are relegated largely to deskilled roles, with manufacturing knowledge being retained among engineering professionals and quality control specialists. The implication is that foundational knowledge workers need to engage conceptually with manufacturing processes is lacking. As a result, any protective or compensatory benefits such activity might bring to production workers is unavailable, and workers thus are exposed to the full physical demands of work rationalization with little respite.

Second, once a lean plant is up and running at full capacity, there is little or no time for on-line technical problem solving (Rinehart et al. 1997). The American automobile firm's mass production principles of *pushing* as much product through the plant as quickly as possible to achieve economies of scale (Liker et al. 1999:10) appears to be the default principle whenever a plant is under economic stress (e.g., running at full capacity, when other plants have been closed). This factor both creates physical fatigue and mental stress among workers, as well as signaling a lack of serious commitment to the quality components of lean manufacturing.

Third, there is the general problem of small group activity in the American workplace that has plagued the quality movement for decades, and also inhibits the full utilization of human capabilities in lean manufacturing. Work groups often do not respond creatively to activities, such as in QC circles, that are dominated by managers. Yet when work groups are placed in a more autonomous context without sufficient information, it is difficult for them to generate meaningful ideas that have a substantial performance impact (Liker et al. 1999).

Fourth, once a plant reaches a certain level of leanness, workers may be reluctant to provide any further suggestions that will make the plant even leaner. Indeed, workers may withhold these suggestions, since, from their perspective, *kaizen* will only make their work harder (Rinehart et al. 1997). Somewhere along the line, workers come to sense or believe that management is more committed to leanness or productivity than it is to quality. Once workers repeatedly receive what they believe are contradictory or, some say, hypocritical signals from managers in a so-called participatory program, then management loses its credibility, and workers shut down their participation in anything other than physical compliance (Vallas 2006a).

Together, the foregoing difficulties combine to make an unbalanced implementation of lean manufacturing over the long term, with an emphasis on reducing costs through the elimination of waste, and a de-emphasis on making full use of human capabilities. The technological rigidity and work standardization of lean manufacturing, and the economic pressures of American society, have combined to enforce physical discipline on a workforce that, in some plants at least, is decidedly not participatory (see for example Babson 1995). Yet, the United States still has failed to close the quality gap with Japan in industries where it competes head-to-head as in automobiles. It is my argument that this gap may be accounted for by the actions of workers who are discriminating between legitimate and illegitimate practices in participatory projects, with an illegitimate practice being one that does not genuinely accord workers authority in the manufacturing process, or value their intellectual contributions. Implicitly or explicitly, workers are saying *no* to these practices. Their discrimination is a moral judgment that reflects a reciprocal *punishment* for the lack of regard that they have been shown by the agents of the owners of their enterprises.

## Conclusion

If we are to transcend our legacy and begin to make fuller use of human capabilities, it is important that anyone practicing anthropology, or a cognate craft in or around an American or other non-Japanese manufacturing firm be aware

of the issues I discuss. Relevant stakeholders should be informed about the risks involved in the implementation of lean manufacturing projects, and about the moral language and structures that are attached to these, such as teamwork, empowerment, continuous improvement. Anthropologists and others need to understand the historical contexts of such language and structure, and the ways in which they are re-contextualized when they travel across national and organizational boundaries (Brannen et al. 1999). Many of the terms associated with lean manufacturing have a moral economy that originated at the Toyota Motor Company, or elsewhere in Japan, a place very different from any American manufacturing firm. Promising

outcomes that parallel those of Toyota or other Japanese companies without recognizing the profound re-formation that would be required to accomplish this goal is a high risk proposition that is not recommended. On the other hand, it is worthwhile to explain the nature of the Toyota Production System and the historic processes by which it has come to be so powerful. Then it is worthwhile to work with managers, workers, unions and other stakeholders to find pathways by which American enterprise also can compete by eliminating waste and making full use of human capabilities in appropriately contextualized and sustainable ways. ○

**Box One: Enterprise Familism and the Origins of the Toyota Motor Corporation**

Much of the institutional architecture of the Toyota Motor Company—its innovative workplace routines and techniques, shared norms and values, and even some of its technical jargon—can be traced to Sakichi Toyoda (1867-1930), the father of Toyota's founder, Kiichiro Toyoda (1894-1952). It was Sakichi, now known as one of Japan's most important inventors, who had the initial idea for beginning Toyota Motor Corporation, and he who provided the initial financing. Sakichi was the son of a carpenter, descended from a long line of farmers, who was born in a small village of Yamaguchi, now part of the city of Kosai, Shizuoka Prefecture, the year before the Meiji government came to power in 1868 (Toyota 1988). The area around Sakichi's home had been active in producing cotton; indeed, his mother wove cloth to supplement the family income. However, inexpensive goods flooding in from the West overwhelmed the Japanese cotton industry, and many others. The people of his region had become impoverished. Sakichi learned of the Meiji government's interest in modernizing Japanese industry, and catching up with the West. As he gained knowledge of the Japanese patent law, promulgated in 1885, he became determined to contribute to the government's mission, and eventually set himself the goal of improving the functioning of weaving looms. Beginning in 1887, he began what turned into many years of slow, painstaking experiments with small technical changes in the hand manufacture of wooden looms, patenting the inventions as he developed them. These activities were not in general accord with the wishes of his father and co-villagers (Cusumano 1985), who thought him eccentric or even a bit mad.

Sakichi patented his first loom in 1891, which improved the quality of cloth and productivity of the loom by 40-50%. He moved to Tokyo and set up a small business that struggled to break even. When this effort drew little interest, Sakichi set about making a power loom using steam engines (Liker 2004), but such work proved difficult, as Sakichi was not technically trained as an engineer, and was working in wood. After many years of hardship, including bankruptcy, a forced return to his village, and eventual break-up of his first marriage, Sakichi invented a yarn reeling machine that finally provided a means to fund his inventions. Sakichi went into business with a customer, opening a textile mill. Productivity was up four fold, and costs decreased by 50%; a single mill hand could operate two or three power looms versus one hand loom (Toyota 1988). It was at this point that Matsui, one of

Japan's largest trading groups, took notice of Sakichi's inventions, and offered an agreement to produce and sell the looms, freeing Sakichi for the technical work that ultimately led to the invention of Japan's first automatic loom, which produced high quality cloth at very low cost. It was the sale of patent rights to this loom that financed Sakichi's son's (Kiichiro) first experiments with motor vehicles.

The foregoing events had consequences for Sakichi's family, as they meant that he was not able to make his eldest son Kiichiro the president of his spinning and weaving business, nor bequeath to him his personal inheritance. Instead, Sakichi's heir would be Kodama Risaburo (1884-1952), an "adopted husband" whom he had allowed to marry his eldest daughter, Aiko, in order to strengthen ties between Sakichi's business and the Mitsui trading group. Risaburo was the younger brother of the head of the Mitsui trading branch in Nagoya, Kodama Kazuo. Sakichi was indebted to Kodama Kazuo for financing his move into cotton spinning using a machine he had invented previously. Since Risaburo was older than Kiichiro, it was Risaburo who became president and heir to Sakichi, and Kiichiro then was a subordinate to his new "elder brother." Risaburo's marriage to Aiko would strengthen ties between Toyoda and the Mitsui group. It is possible that Sakichi's decision to make Risaburo the president of his business was influenced by Kiichiro's health status. Kiichiro had been a "frail and sickly boy, who many felt did not have the physical capacity to become a leader" (Liker 2004:17). Indeed, after starting college classes at Tokyo Imperial University, Kiichiro fell ill and had to take a year's leave of absence to convalesce (Toyoda 1987:22). Sakichi may have believed that Risaburo had a better chance of leading his company into the future; it was not unusual for family members to be passed over in succession if their capacity to carry on with the enterprise was in doubt.

Sakichi did not forget his son Kiichiro, however. The father had the idea of making Kiichiro the head of a new motor vehicle venture inside his spinning and weaving business, which would be financed through sale of the patent for his automatic loom. Sakichi got the idea for starting an experiment with motor vehicles on a visit to the United States in 1910, where he was impressed with American mass production techniques which he viewed as a means to assemble a conglomeration of parts (Toyota 1988). Financing for the new auto venture consisted of one million yen (100,000 pounds), which were secured when Sakichi sold the patent rights to his loom to the Platt Brothers of Great Britain, the world's largest manufacturer of spinning and weaving machinery (Cusumano 1985). Kiichiro eventually became a mechanical engineer, trained at the elite Tokyo University, and he worked in machine parts manufacturing at his father's spinning and weaving business. According to Cusumano (1985), Kiichiro was not particularly interested in conducting any experiments with motor vehicles, since the Japanese automobile industry at the time was dominated by Ford Japan and General Motors Japan, and no native firms could hope to compete with them. However, Kiichiro wanted to honor his father's wish of starting up a motor vehicle company, and Sakichi repeated this wish before his death. Kiichiro had the authority and funds to open an automobile department within the Toyoda Automatic Loom business, and in 1933 he did so. When he ran short on funds, his brother-in-law Risaburo, president of the firm, refused to provide additional support because he believed the investment was too risky, given the amount of capital required, and domination of the market by American companies (Cusumano 1985). However, Kiichiro's elder sister Aiko (Risaburo's wife) was successful in persuading her husband to honor her father's wish to support Kiichiro's move into the automobile industry, and so Risaburo lowered dividends in the weaving company and increased his firm's capitalization to provide additional funding for automobile experimentation in 1934 and 1935. The first prototype vehicle was produced in May 1935.

*Box Two: Strong Reciprocity and the Japanese Employment System at Toyota*

Conditions immediately following World War II were very harsh for Toyota. While the company had 10,000 employees during the war years, this number plunged to 3,700 by 1945 due to shortages of food supplies and Toyota's inability to pay workers' salaries. The company turned its attention to cultivating crops, building a flourmill, bakery and charcoal plant to supply employees with food and fuel (Toyota 1988). Facilities were used to make household implements. Toyota did not dismiss its employees during this period, but gave everyone the option of voluntarily remaining with the corporation or choosing to leave, even though it did not have the means to pay them regularly.

In the face of raging inflation, Toyota needed to secure bank financing, and in the process accrued huge debts. The firm had a debt of 782 million yen at the end of November 1948, eight times the company's total capital value (Toyota 1988). A Management Rationalization Committee, which included representatives from Toyota Motor Koromo Labor Union was formed, and worked aggressively to boost efficiency and cut material and other costs. Toyota had a *no dismissal* policy, but they withheld workers' payments due to the firm's difficulty collecting payments on vehicles and pressure from creditors (Toyota 1988). In the Management Committee, employee negotiators agreed to a 10% wage reduction, and in return, the corporation sent the union a memorandum promising no dismissals.

Significantly, however, the consortium of banks that was providing financing to Toyota attached conditions to their loan, one of which was the dismissal of *surplus labor*. In 1950, while wages were still being withheld, the labor union formed a *struggle committee* and began collective bargaining talks. During these negotiations, Toyota reneged on its earlier promise and asked for 1600 voluntary resignations. Probably as a result of this action, the workers went on strike for a brief period early in 1950. Underscoring the significance of this departure from the company's past practice and the betrayal of his promise, President Kichiro Toyoda formally apologized (Toyota 1988:107):

"I had hoped that we might find a good solution, but things haven't turned out as I thought they would. We have only two ways out of this dilemma: Dissolve the company or ask some of our employees to leave. I really am most sorry. It breaks my heart that we have had to come to this. Thinking of all our many affiliates, it would not be easy to break up the company. We, the management, bear a heavy responsibility for having brought the company to these straits. I ask for your help and cooperation and await your fair judgment."

Meanwhile, the executive vice president stated that Toyota had a moral obligation to avoid dismissals (Toyota 1988:108). The company then shifted its stance and asked employees for voluntary retirements. The union would not agree, however, asking whether retirement payments would be made. Also, the union objected because employees had already made a bargain consisting of a 10% wage reduction in exchange for a no dismissal policy. While Toyota and the union battled in court over an injunction based on their previous agreement, the banks signaled their intent to cut financing and production levels fell. As a crisis loomed, President Kichiro Toyoda resigned his position as president and also resigned from Toyota, as did Executive Vice President Kumabe and Managing Director Kohachiro Nishimura, who was in charge of financial affairs. As soon as Kichiro resigned, employees began leaving the company. Soon, 1,760 employees applied for retirement (or were pressured to leave), with the final number reaching 2,146 (Toyota 1988).



Following the 1950 dismissals, or resignations, depending on one's point of view, Toyota treated the remaining workers as *lifetime* or more accurately *career-long* employees, an elite group that was granted higher salaries and benefits than temporary employees (Cusumano 1985). This move tempered worker militancy and encouraged loyalty, cooperation and compliance with management. Workers who remained on the payroll were grateful to have their positions, as the isolated rural location of Toyota in Aichi prefecture meant that there were not many other employment opportunities. Temporary employees also had an incentive to cooperate so that they would have a greater chance of moving into the ranks of the permanently employed. With respect to union leadership, the most militant union activists were among those who left; some of these were not voluntary departures. Certain union leaders were moved into management positions, while a new suggestion system created in 1951, modeled after Ford, started to bring all employees into the management process. Thus, the basic pattern of an enterprise union that favors treatment for a core of elite employees, which is essentially a two tier employment system with cooperative labor-management relationships, already was emergent at Toyota, even while the militant industrial union still was in effect across the automobile industry (Cusumano 1985).

### *Box Three: Invention of the Toyota Production System*

It was at Toyota following World War II that the elimination of waste first became an absolute necessity, due to the devastation of the war and the resulting shortages of critical resources needed to make automobiles (Toyota 1988). After World War II, Japanese automobile manufacturers' challenge was to simultaneously enhance manufacturing productivity and product variety, that is, small lots of many diverse goods, since their markets were too small to support mass production. American manufacturing processes were inappropriate, as they assumed high volumes of standardized products that did not allow much variety (Cusumano 1985). Toyota organized a 12-week study tour of the United States in 1950 to learn as much as they could about American automobile manufacturing techniques, and what they found changed the history of making goods worldwide. According to Jeff Liker (2004:21):

"What they saw was lots of equipment making large amounts of products that were stored in inventory, only to be moved to another department where big equipment processed the product, and so on to the next step. They saw how these discreet process steps were based on large volumes, with interruptions between these steps causing large amounts of material to sit in inventory and wait. They saw the high cost of equipment and its so-called efficiency in reducing the cost per piece, with workers keeping busy by keeping equipment busy. They looked at traditional accounting measures that rewarded managers who cranked out lots of parts and kept machines and workers busy, resulting in a lot of overproduction and a very uneven flow, with defects hidden in these large batches that could go undiscovered for weeks."

Toyota far surpassed what might be defined as *catching up*. By the mid-1960s, the company had developed and refined a system of lean-manufacturing practices and techniques that towered over any other comparable manufacturing system in the world, enabling the firm to compete internationally and eventually to dominate the global marketplace for automobiles.

Taichii Ohno developed the Toyota Production System (TPS) or lean manufacturing. He was a Toyota engineer trained in mechanical engineering at the Nagoya Higher Industrial School. Ohno began his experiments in lean manufacturing by reorganizing production in the machine shop of Toyota's Koromo plant to enable small lots to flow more smoothly between

processing steps. To do this, Ohno used the basic approach of American time and motion studies, but applied these much more rigorously, to analyze each operation and job, and then tried to redistribute work to eliminate waste in worker motions and machine idle time. Lines could be sped-up or slowed-down and workers could be added or subtracted, depending upon demand; core workers always had a job, but temporary workers did not. Extra machines or overtime were factored in as needed.

Ohno also asked workers to take responsibility for two or more steps in the process, rather than only a single step associated with a single machine. He rearranged the machines in two parallel lines, or in an L shape, so that each worker could handle more than one machine at a time. While in the United States, American workers were assigned to one particular station and job, Toyota workers might be running five to ten machines in the 1950s. If workers were idle, they were asked to do preventive maintenance on machines, or to help other workers. Universal machine tools were installed that enabled several operations to be performed by one mechanism. Ohno followed the same principles Sakichi Toyoda had built into his automatic looms, using automation and mechanical devices to prevent mistakes and to streamline work. This approach eventually evolved into a broader system known as *jidoka*, or “automation with a human touch” (Liker 2004:16).

The basic idea behind these changes was to eliminate what is known as *buffer stock* and work-in-process inventory. That is, in a mass production plant, extra parts and material are kept on hand to enable machine operators to run their machines at high volume, producing as many parts as possible regardless of potential disruptions in supply (Cusumano 1985; Womack et al., 1985). Under the mass production system, efficiency is maximized when machines run continuously, as the cost per part falls when there are more parts produced (this assumes economies of scale with a mass market). The problem with mass production is that it is wasteful. The *buffer stock* and work-in-process inventory that is kept on hand to ensure continuous production is costly because it represents an investment of the firm’s resources that is not being utilized and is expensive to store. And it has quality implications because if there are defects in the piles of parts, no one knows until many hundreds or thousands of the parts have been processed, at which point it may be too late to fix them (Liker 2004).

Ohno envisioned a different manufacturing method in which there would be no *buffer stock* or work-in-process inventory. Each machine would be working on only one part at a time or in small batches, and this would flow smoothly to the next machine *just in time* (JIT) for the next operation. Instead of parts being *pushed* through the manufacturing process by a manager eager to make as many parts or automobiles as possible, the new concept utilized *pull* instead. Each worker would *pull* only as many parts as he needed from the previous station, based on how many were needed at final assembly. Later, Toyota learned how to *pull* the correct number of parts or vehicles based on actual customer orders, and to make changes in these orders up to the last minute. This system eliminated a build-up of inventory, thereby protecting against declines in demand, and also allowed the company to respond flexibly to customer orders, all of which provided enormous competitive advantages globally, forcing other companies to copy them. The *pull* system also is facilitated by *kanban*, another Ohno invention, which are paper or metal signs that control the flow of materials in the production process.

Worker authority increased under Ohno’s *just in time* system. In 1955, Ohno gave workers in final assembly the right to stop the assembly line if problems developed (Cusumano 1985). In a mass production factory, such a thing was unheard of before, as it would be hugely expensive. Lights were installed to enhance the stop-line process; a red light meant stop, while yellow



requested supervisory help. Eventually, all workers had access to buttons that allowed them to stop the line to alert others to a problem. Called the *andon* system, it was first implemented at the Motomachi plant. *Stopping the line* provided an opportunity to investigate a problem, determine its origin, and solve the root cause, thereby eliminating costly quality defects. Immediate feedback regarding an error was made to the responsible station through a loudspeaker system, or by a supervisor.

Other aspects of lean manufacturing are more controversial, however. *Just in time* production runs at a fast pace, pushing workers to the maximum of their capacity. One Toyota worker who was critical of the company's manufacturing methods published a book stating that the pace of production leads to a higher rate of accidents than the industry average in Japan (3.6 per million working hours in 1980 compared with 2.19 industry average). This claim was denied by Toyota, whose engineers claimed that in 1977, their accident rate was only half that of American firms, but no alternative data was issued (Sugimori et. al. 1977). A journalist, Satoshi Kamata, who graduated in literature from Waseda University, became a production worker in order to write about the Toyota Production System. His book, published in English in 1982 under the title *Japan in the Passing Lane*, provides a fairly bleak picture of a Toyota worker's day on the production line. In this book, Kamata claims that Toyota workers feel *despair* over highly proscribed working conditions that treat them more like machines than humans, making workers weary and accident-prone (Kamata 1982). At one point in Kamata's diary, for example, a worker lost part of his finger, and many in the shop reportedly felt sorry for the worker's supervisor because his perfect safety record was broken as a result of the accident.

Yet, as Ronald Dore wrote in his introduction to the English version of Kamata's book, (1982:xix-xx):

"...it is harder for Kamata to keep his sense of antagonism sharp because his fellow workers are not alienated. Their grumbling is real enough, and they are initially angry about, for instance, the apparently unilateral decision to work an extra Saturday shift. But even about that, they are resigned to the likelihood that the union will agree with the company that the shift is necessary, and hardly see themselves as victims of injustice. Their grumbles are a railing against their fate, but a fate which is dictated by the necessity of the company's competitive struggle against Nissan, not by the heartlessness of managers or greed by the owners of capital. Hence the way the grumbles turn into "soldiering on" jokes. And hence it is possible, as Kamata tells us incidentally, for the company to send one of his workmates back to his former regiment to try to recruit some of his friends in full confidence that he will tell a good story of the advantages of working for Toyota."

Taichii Ohno had to make numerous accommodations to address workers' concerns about his new manufacturing methods before he could proceed. These concerns were addressed in the period between 1950 and 1954. He installed automatic devices on equipment. These enabled workers to more easily tend several pieces of equipment at once. They included failsafe mechanisms that automatically stopped a machine at the end of its run, pneumatic devices that held work in place, or technical devices that took the place of actions that a worker typically would have done (Sugimori et al. 1977). He also granted shop floor personnel more control over the pace of production. Later on, the adoption of automatic conveyance equipment, and later still, robotics, saved workers time and energy moving around the plant or handling heavy pieces of equipment or machinery. By 1955, the lean manufacturing changes were agreed to by the union and eventually became a regularly accepted part of Toyota's work process.

## Notes

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## References Cited

- Abegglen, James C.  
1958 *The Japanese Factory: Aspects of Its Social Organization*. Glencoe, Illinois: The Free Press.
- Adler, Paul S.  
1999 "Hybridization: Human Resources Management at Two Toyota Transplants. In *Remade in America: Transplanting and Transforming Japanese Management Systems*. Edited by Jeffrey K. Liker, W. Mark Fruin, and Paul S. Adler. Pages 75-116. Oxford, England, United Kingdom: Oxford University Press.
- Appadurai, Arjun, editor  
1986 *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge, England, United Kingdom: Cambridge University Press.
- Arnold, Thomas C.  
2001 "Rethinking Moral Economy." *American Political Science Review* 95 (1): 85-95.
- Babson, Steve  
1995 "Lean Production and Labor: Empowerment and Exploitation." In *Lean Work: Empowerment and Exploitation in the Global Auto Industry*. Edited by Steve Babson. Pages 1-37. Detroit, Michigan: Wayne State University Press.
- Bellah, Robert  
1985 *Tokugawa Religion: The Cultural Roots of Modern Japan*. New York: The Free Press.
- Blim, Michael  
2000 "Captialisms in Late Modernity." *Annual Review of Anthropology* 29: 25-38.
- Brannen, Mary Yoko, Jeffrey K. Liker, and W. Mark Fruin  
1999 "Recontextualization and Factory-to-Factory Knowledge Transfer from Japan to the United States." In *Remade in America: Transplanting and Transforming Japanese Management Systems*. Edited by Jeffrey K. Liker, W. Mark Fruin, and Paul S. Adler. Pages 117-153. Oxford, England, United Kingdom: Oxford University Press.
- Burawoy, Michael  
1979 *Manufacturing Consent: Changes in the Labor Process under Monopoly Capitalism*. Chicago: University of Chicago Press.
- Clark, Rodney  
1979 *The Japanese Company*. New Haven, Connecticut: Yale University Press.
- Cole, Robert  
1971 *Japanese Blue Collar: The Changing Tradition*. Berkeley, California: University of California Press.
- Cole, William E. and John W. Mogab  
1995 *The Economics of Total Quality Management: Clashing Paradigms in the Global Market*. Cambridge, Massachusetts: Blackwell, Publisher.
- Coyle, Diane  
2007 *The Soulful Science: What Economists Really Do and Why It Matters*. Princeton, New Jersey: Princeton University Press.
- Cusumano, James  
1985 *The Japanese Automobile Industry: Technology and Management at Nissan and Toyota*. Cambridge, Massachusetts: The Council on East Asian Studies, Harvard University.
- Darwin, Charles  
1871 *The Descent of Man and Selection in Relation to Sex*. London: J. Murray Publisher.
- Dore, Ronald  
1969 "The Modernizer as a Special Case: Japanese Factory Legislation, 1882-1911." *Comparative Studies in Society and History* 11 (4).  
1973 *British Factory-Japanese Factory: The Origins of National Diversity in Industrial Relations*. Berkeley, California: University of California Press.
- Economist, The*  
2007 "A Wobble on the Way to the Top." U. S. Edition, November 10, 2007, pages 85-87.
- Ellins, Michael  
2006 "Does God Want You to Be Rich?" *Time Magazine*, September 18, 2006, pages 48-56.
- Fackler, Martin  
2007 "The 'Toyota Way' Is Translated for a New Generation of Foreign Managers." *The New York Times*, February 15, 2007.
- Fei, Shaotong  
1948 *From the Soil: Foundations of Chinese Society*. Berkeley, California: University of California Press.
- Ferkany, Susan T.  
1992 " 'For the Family': Building Business in Monterrey, Mexico." Unpublished doctoral dissertation. Detroit, Michigan: Department of Anthropology, Wayne State University.

- Fry, Douglas P.  
2006 "Reciprocity: The Foundation Stone of Morality." In *Handbook of Moral Development*. Edited by Melanie Killen and Judith Smetana. Pages 399-422. Mahway, New Jersey: Lawrence Erlbaum Associates, Publisher.
- Fucini, Joseph J. and Suzy Fucini  
1990 *Working for the Japanese: Inside Mazda's American Auto Plant*. New York: The Free Press.
- Gettelfinger, Ron  
2007 "Union Auto Plants Beat Competitors – Organized Factories Excel in Efficiency in An Apples-to-Apples Comparison." *The Detroit (Michigan) News*, August 3, 2007, page A11.
- Gintis, Herbert, Samuel Bowles, Robert Boyd, and Ernest Fehr  
2005 "Moral Sentiments and Material Interests: Origins, Evidence and Consequences." In *Moral Sentiments and Material Interests: The Foundation of Cooperation in Economic Life*. Edited by Herbert Gintis, Samuel Bowles, Robert Boyd, and Ernest Fehr. Pages 3-40. Cambridge Massachusetts: Massachusetts Institute of Technology (MIT) Press.
- Graham, Laurie  
1995 "Subaru-Isuzu: Worker Response in a Non-union Japanese Transplant." In *Lean Work: Empowerment and Exploitation in the Global Auto Industry*. Edited by Herbert Gintis, Samuel Bowles, Robert Boyd, and Ernest Fehr. Pages 199-219. Detroit, Michigan: Wayne State University Press.
- Hamada, Tomoko  
2004 "The Anthropology of Japanese Corporate Management." In *A Companion to the Anthropology of Japan*. Edited by Jennifer Robertson. Cambridge, Massachusetts: Blackwell, Publisher.
- Hamilton, W. D.  
1964 "The Genetical Evolution of Social Behavior." *Journal of Theoretical Biology* 37: 1-16, 17-52.
- Hodson, Randy  
2001 *Dignity at Work*. Cambridge, England, United Kingdom: Cambridge University Press.
- Jacoby, Sanford M.  
2005 *The Embedded Corporation: Corporate Governance and Employment Relations in Japan and the United States*. Princeton, New Jersey: Princeton University Press.
- J. D. Power and Associates  
2007 "Brand Quality Ratings."  
Accessed November 4, 2007, online at [www.jdpower.com/autos/quality-ratings](http://www.jdpower.com/autos/quality-ratings).
- Kamata, Satoshi  
1982 *Japan in the Passing Lane*. Translated and edited by Tatsuru Akimoto. New York: Pantheon Books.
- Kaplan, Hillard and Michael Gurven  
2005 "The Natural History of Human Food Sharing and Cooperation: A Review and a New Multi-individual Approach to the Negotiation of Norms." In *Moral Sentiments and Material Interests: The Foundation of Cooperation in Economic Life*. Edited by Herbert Gintis, Samuel Bowles, Robert Boyd, and Ernest Fehr. Pages 75-114. Cambridge Massachusetts: Massachusetts Institute of Technology (MIT) Press.
- Kluckhohn, Clyde  
1944 *Mirror for Man: The Relation of Anthropology to Modern Life*. New York: Whittlesey House Publisher.
- Kondo, Dorinne K.  
1990 *Crafting Selves: Power, Gender, and Discourses of Identity in a Japanese Workplace*. Chicago: University of Chicago Press.
- Liker, Jeffrey K.  
2004 *The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer*. New York: McGraw-Hill, Publisher.
- Liker, Jeffrey K., W. Mark Fruin, and Paul S. Adler  
1999 "Bringing Japanese Management Systems to the United States: Transplantation or Transformation?" In *Remade in America: Transplanting and Transforming Japanese Management Systems*. Edited by Jeffrey K. Liker, W. Mark Fruin, and Paul S. Adler. Pages 3-35. Oxford, England, United Kingdom: Oxford University Press.
- Menard, Claude and Mary M. Shirley  
2005 *Handbook of New Institutional Economics*. Dordrecht, The Netherlands: Springer Publisher, Kluwer Academic Publishers Group.
- Miller, Daniel  
1995 "Consumption Studies as the Transformation of Anthropology." In *Acknowledging Consumption: A Review of New Studies*. Edited by Daniel Miller. Pages 264-295. London: Routledge, Chapman and Hall Publisher of Taylor and Francis, Incorporated..
- Moody, Glyn  
2001 *Rebel Code: Inside Linux and the Open Source Revolution*. Cambridge, Massachusetts: Perseus Publishing Company.

- Nakamura, Masao, Sadao Sakakibara, and Roger G. Schroeder  
1999 "Just-in-Time and Other Manufacturing Practices: Implications for United States. Manufacturing Performance." In *Remade in America: Transplanting and Transforming Japanese Management Systems*. Edited by Jeffrey K. Liker, W. Mark Fruin, and Paul S. Adler. Pages 361-381. Oxford, England, United Kingdom: Oxford University Press.
- Ohno, Taiichi  
1988 *The Toyota Production System: Beyond Large Scale Production*. The title given is as translated from Japanese to English. Tokyo, Japan: Diamond, Incorporated, Publisher.
- Ong, Aihwa  
1987 *Spirits of Resistance and Capitalist Discipline: Factory Women in Malaysia*. Albany, New York: State University of New York Press.
- Ong, Aihwa and Stephen J. Collier  
2006 *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*. Malden, Massachusetts: Blackwell, Publisher.
- Oxford English Dictionary*  
1971 "Economy." *Compact Edition of the Oxford English Dictionary, Complete Text Reproduced Micrographically*. Volume I of II. Page 831. New York: Oxford University Press.
- Parker, Mike and Jane Slaughter  
1995 "Unions and Management by Stress." In *Lean Work: Empowerment and Exploitation in the Global Auto Industry*. Edited by Steve Babson. Pages 41-53. Detroit, Michigan: Wayne State University Press.
- Pil, Frits K. and John Paul MacDuffie  
1999 "Transferring Competitive Advantage across Borders: A Study of Japanese Auto Transplants in North America." In *Remade in America: Transplanting and Transforming Japanese Management Systems*. Edited by Jeffrey K. Liker, W. Mark Fruin, and Paul S. Adler. Pages 39-74. Oxford, England, United Kingdom: Oxford University Press.
- Polanyi, Karl  
1944 *The Great Transformation: The Political and Economic Origins of Our Times*. New York: Farrar and Rinehart Publisher. Reprinted 2001, Boston: Beacon Press.
- Price, John  
1995 "Lean Production at Suzuki and Toyota: A Historical Perspective." In *Lean Work: Empowerment and Exploitation in the Global Auto Industry*. Edited by Steve Babson. Pages 81-107. Detroit, Michigan: Wayne State University Press, pp. 81-107.
- Ramsay, Meredith  
1996 *Community, Culture, and Economic Development: The Social Roots of Local Action*. Albany, New York: State University of New York Press.
- Rhody, J.D. and T.L.P. Tang  
1995 "Learning from Japanese Transplants and American Corporations." *Public Personnel Management* 24 (1):19-32.
- Rinehart, James, Christopher Huxley and David Robertson  
1997 *Just Another Car Factory? Lean Production and Its Discontents*. Ithaca, New York: Cornell University Press.
- Rohlen, Thomas  
1974 *For Harmony and Strength: Japanese White-Collar Organization in Anthropological Perspective*. Berkeley, California: University of California Press.
- Sahlins, Marshall  
1972 *Stone Age Economics*. Chicago: Aldine Publishing Company.
- Scott, James C.  
1976 *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. New Haven, Connecticut: Yale University Press.  
1985 *Weapons of the Weak: Everyday Forms of Peasant Resistance*. New Haven, Connecticut: Yale University Press.
- Scott, W. Richard  
1995 *Organizations: Rational, Natural, and Open Systems*. Upper Saddle River, New Jersey: Prentice Hall Publisher.
- Silk, Joan B.  
2005 "The Evolution of Cooperation in Primate Groups." In *Moral Sentiments and Material Interests: The Foundation of Cooperation in Economic Life*. Edited by Herbert Gintis, Samuel Bowles, Robert Boyd, and Ernest Fehr. Pages 43-74. Cambridge Massachusetts: Massachusetts Institute of Technology (MIT) Press.
- Simon, Herbert A.  
1976 *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*. Third edition. New York: The Free Press / Collier Macmillan Limited. First published in 1957 with a fourth edition published in 1997.  
1979 "Rational Decision Making in Business Organizations." *American Economic Review* 69: 493-513.
- Sivaramakrishnan, K.  
2005 "Moral Economies, State Spaces, and Categorical Violence." *American Anthropologist* 107 (3, September): 321-330.

- Smith, Adam  
1759 *The Theory of Moral Sentiments*. Reprint 1966. New York: Augustus M. Kelley, Publisher.
- 1776 *The Wealth of Nations*. Originally published as *An Inquiry into the Nature and Causes of the Wealth of Nations*. Reprint 1937. New York: The Modern Library.
- Smith, David M.  
2000 *Moral Geographies: Ethics in a World of Difference*. Edinburgh, Scotland, United Kingdom: Edinburgh University Press.
- Smith, Patrick L.  
2006 "Made in Corporate Japan: Hybrid Management Style." *International Herald Tribune*. August, 31, 2006, page 1.
- Smith, Vicki  
2006 "Worker Participation: Current Research and Future Trends." *Research in the Sociology of Work* 6: xi-xxiii. Amsterdam, The Netherlands: Elsevier Publisher.
- Sugimori, J., K. Kusunoki, F. Cho and S. Uchikawa  
1977 "The Toyota Production System and Kanban System: Materialization of Just-in-Time and Respect-for-Human System." *International Journal of Production Research* 15 (6): 553-564.
- Swank, Cynthia K.  
2003 "The Lean Service Machine." *Harvard Business Review* (October): 1-8.
- Tawney, R. H.  
1958 Foreword, *The Protestant Ethic and the Spirit of Capitalism*. By Max Weber. New York: Charles Scribner's Sons, Publisher.
- Thomas, Murray R.  
1997 *Moral Development Theories – Secular and Religious: A Comparative Study*. Westport, Connecticut: Greenwood Press.
- Thompson, E. P.  
1963 *The Making of the English Working Class*. New York: Random House, Publisher.
- 1971 "The Moral Economy of the English Crowd in the Eighteenth Century." *Past and Present* 50: 76-136.
- Toyoda, Eiji  
1987 *Toyota Fifty Years in Motion: An Autobiography by the Chairman*. Tokyo: Kodansha International Limited, Publisher.
- Toyota Motor Corporation  
1988 *Toyota: A History of the First 50 Years*. Toyota City, Japan: Toyota Motor Corporation.
- Turiel, Edward  
2006 "Thought, Emotions, and Social Inter-actional Processes in Moral Development." In *Handbook of Moral Development*. Edited by Melanie Killen and Judith Smetana. Pages 7-35. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.
- Vallas, Steven Peter  
2006a "Empowerment Redux: Structure, Agency, and the Remaking of Managerial Authority." *American Journal of Sociology* 111 (6): 1677-1717.
- 2006b "Theorizing Teamwork under Contemporary Capitalism." *Research in the Sociology of Work* 6: 3-24. Amsterdam, The Netherlands: Elsevier, Publisher.
- Walton, John  
1992 *Western Times and Water Wars: State, Culture and Rebellion in California*. Berkeley, California: University of California Press.
- Weber, Max  
1958 *The Protestant Ethic and the Spirit of Capitalism*. Translated by Talcott Parsons. New York: Charles Scribner's Sons, Publisher. First published in 1930.
- Wilk, Richard R.  
1996 *Economies and Cultures: Foundations of Economic Anthropology*. Boulder, Colorado: Westview Press.
- Winter, Sidney G.  
1990 "Organizing for Continuous Improvement: Evolutionary Theory Meets the Quality Revolution." In *Evolutionary Dynamics of Organizations*. Edited by Joel A. C. Baum and J. V. Singh. Pages 90-108. New York: Oxford University Press.
- Womack, James P., Daniel T. Jones and Daniel Roos  
1990 *The Machine that Changed the World*. New York: Rawson Associates, Publisher.
- Yergin, Daniel and Joseph Stanislaw  
1998 *The Commanding Heights: The Battle between Government and the Marketplace That Is Remaking the World*. New York: Simon and Schuster, Publisher.
- Zaloom, Caitlin  
2006 *Out of the Pits: Traders and Technology from Chicago to London*. Chicago: University of Chicago Press.