Lean Production: A Capitalist Utopia?

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The historical and theoretical investigations published as Notebooks for Study and Research situate themselves within a broadly-defined, critically-re-examined Marxist framework. In several of the most recent Notebooks, the authors have felt compelled to respond more or less directly to the assertion, pervasive in the early 1990s, that this framework must be rejected.

Ernest Mandel’s and David Mandel’s Notebooks on the Russian revolution (NSR nos. 17/18 and 21), for example, respond to the claim that the whole historical cycle opened in 1917 began with an ideologically-inspired coup, which class analysis cannot explain. They argue that on the contrary the transformation of the Russian state and society was launched by a broad, powerful, self-organized, working-class movement. The present Notebook by Tony Smith responds to a challenge to Marxism that is perhaps even more fundamental: the claim that major economic changes now underway are making Marx’s analysis and critique of capitalism obsolete.

*Lean Production: A Capitalist Utopia?* examines the claim that innovative ways of organizing production and marketing, within an economic system that is still capitalist, are eliminating earlier antagonisms between capital and labour, between producers and consumers, and between different companies. According to the business press, “lean production” unites companies, workers and consumers in the harmonious pursuit of common interests.

Smith agrees that lean production is transforming many of the earlier, Fordist ways of organizing production. He acknowledges that if the assertions of lean production ideologues are true, then Marxism is in fact essentially obsolete. He then lays out key points of Marx’s analysis, explaining why Marx defined the capital-labour relationship as exploitive, saw consumers’ interests as conflicting with capital’s, and considered antagonism between units of capital inevitable. Picking apart the business press’s arguments one by one, Smith argues that the real changes brought about by lean production do not alter the exploitive, alienating and anarchic character of capitalism.

Finally, he explains why lean production is in some ways more efficient and dynamic than the bureaucratically-planned economies that existed until recently in the Soviet Union and Eastern Europe. He proposes a model for a socialist economy, based on grassroots participation and
democratic coordination, that could match the dynamism of lean production while genuinely keeping its broken promises of cooperation and harmony.

Tony Smith's aim is not just to respond to a theoretical challenge, but also to help people respond to the practical challenge of lean production. He considers that the most important forums for the critical analysis of new capitalist techniques are the shop floors, offices, union halls, and political settings where workers discuss their own experiences and plan their own actions. This Notebook is meant to contribute to such discussions.

* Tony Smith wishes to thank Mike Parker, Richard Walker, Peter Drucker and Robert Went for their comments and suggestions.
Introduction:
A New Phase of Capitalism

In principle there are an indefinite number of ways the history of capitalism could be divided. The sequence presented by Marx in Capital begins with the putting-out system, and then moves to the early factories. Both made use of traditional artisan technologies, the former in the household or independent workshop under contract to merchant capitalists, the latter under the watchful eye of the first industrial capitalists. In the succeeding period, manufacturing, the key innovation in the factory was the rise of the detail labourer, assigned a single task to perform repetitively. After aspects of the labour process were transformed into machine-like operations, it became possible to introduce machines to perform some of these operations. Marx referred to this as the rise of "big industry" or "machinofacture".

How are we to interpret this historical progression? It certainly should not be taken to imply that every capitalist society must proceed through each stage of this sequence in turn. Economic history shows conclusively that this is nonsense.1 Marx himself noted explicitly that the above sequence was extrapolated from the history of Great Britain, and that it need not hold elsewhere.2 Countries undergoing the transition to capitalism after Great Britain were able to leapfrog over various stages, jumping in certain sectors to the most advanced forms of production.

The term "stages" also seems to imply that once a new level has been reached in a society, old ones are completely abandoned. This too is nonsense. Newly developed technological systems and modes of social organization have existed side by side with technologies and organizational structures whose past history can be measured in decades, centuries, or even millennia. In the period of big industry when Capital was written, the overwhelming majority of economic agents in Western Europe were still engaged in small-scale agricultural production on family farms. The phenomenon of combined and uneven development makes a mockery of all talk of a fixed and necessary sequence of stages in capitalism.

We must constantly remember that there is no teleology in capitalism, no model of capitalism that provides a ultimate goal towards which all development tends. Social struggles are always capable in principle of reversing any dominant trends and pushing historical development down quite unexpected paths. Does this mean that Marx's periodization must be rejected? Not at all. Marx's principal concerns were with the direction in which capitalism was developing in the most industrialized nations, and the political trajectory of wage labourers in those nations. In this theoretical and practical context Marx was correct to insist that the progression from the putting-out system to machinofacture provided a helpful way of looking at the history of capitalism.

1 And political history shows conclusively that the acceptance of a stages view of history has disastrous practical consequences. See Michel Lowy, The Politics of Combined and Uneven Development, London: Verso, 1981.
2 In an 1877 letter Marx rejected the attempt to turn his "historical sketch of the genesis of capitalism in Western Europe" into a "historico-philosophic theory of the general path every people is fated to tread, whatever the historical circumstances in which it finds itself." In Marx and Engels Selected Correspondence, Moscow: Progress Press, 1965, pp. 312-13.
The concept of “Fordism” has been widely used in attempts to update Marx’s historical account in order to do justice to mid-twentieth-century capitalism. It is true that pre-Fordist ways of organizing production and distribution persisted in many economic sectors and geographical regions of the capitalist global system during this period. It is also true that a great number of features thought to be characteristic of Fordist production and distribution can be found in earlier historical periods. Nonetheless, an understanding of Fordism is still helpful for grasping both the general direction of capitalist development and the political trajectory of wage labourers in the advanced industrialized countries of mid-twentieth-century capitalism.

As a system of production in the narrow sense, Fordism involved the mass production of standardized goods and services. The desire to attain economies of scale led to relatively long production runs of these goods and services. The central role of single-purpose (“dedicated”) machinery in Fordism reinforced the tendency for extended product runs. This was due to the fact that this machinery was expensive and difficult to replace without shutting down production for a protracted period, during which time the circuit of capital accumulation was interrupted.

The labour process in Fordism was organized around assembly lines in which each worker was assigned a specific task to be performed repeatedly. This arrangement went beyond the detail labour discussed by Marx in two ways. First, the correct way to perform the task was determined by time/motion studies undertaken by industrial engineers. This is termed “Taylorism”, after Frederick Taylor, the founder of scientific management. Second, the various tasks to be performed were integrated in an extensive system of formal job classifications and work rules, administered by an extensive bureaucratic apparatus of supervisors and middle managers. These classifications and rules were premised upon a strict separation of mental and manual labour.

The paradigmatic Fordist firms were characterized by a relatively high degree of vertical integration, so that they produced many of the means of production they used themselves. This vertical integration, however, was never complete; some purchase of inputs from suppliers was always required. The relationship between a manufacturer and its suppliers was typically a “hands-off” one. Manufacturers were quick to change suppliers if a new one came along who could undercut previous prices. In this sense the boundaries between firms were obvious and fixed.

Throughout the chain of production the operative precept of Fordism was the “just-in-case” principle. Raw materials and parts would be stockpiled just in case their provision by suppliers was interrupted. Partly finished goods would amass at each step of the production process just in case any problems in production arose later; in this manner expensive machines located downstream in the production process could to continue to function when problems arose upstream. Reserves of labour would be hired just in case there were absences. Finished goods would pile up as inventory just in case sudden orders from distributors came in, and so on.

Turning now to consumption, the mass production of standardized goods and services would have been for naught if buyers could...
not be found for these products. Corporations provided markets for certain goods, and the state purchased a wide range of commodities, especially those related to the military.7 For our purposes the extension of mass consumer markets is of most interest. Wage increases played an important role here, of course. Suburbanization was also a crucial factor, leading to greater consumer expenditures on housing, automobiles, washers, dryers, refrigerators, and so on. Manufacturers and distributors paid advertising firms vast sums to ensure that demand for output would be high.

From its roots in the nineteenth-century “American system” of manufacturing, through its spread to the auto industry and beyond in the early decades of the twentieth century, Fordism culminated in the extensive period of growth after World War II. By the mid-1970’s, however, the “crisis of Fordism” was well underway. A great variety of factors have been put forward to account for this crisis, including:

- a falling rate of profit stemming from unproductive expenses connected with the expansion of corporate bureaucracies, advertising costs, and so on;
- worker resistance at the point of production (strikes, absenteeism);
- high levels of machine and worker down-time;
- high inventory costs; and
- inflationary tendencies set off by a massive expansion of credit.

I shall not attempt to weigh the relative importance of these and other factors here.8 The important point is simply that the epoch of Fordism appears to be coming to a close. We now appear to be in the midst of a transitional period, in which a new variant of capitalism is gradually taking shape. Of course the path of capitalism remains both contingent and uneven. Many sectors and firms continue to operate in a broadly Fordist (or even pre-Fordist) manner, and will no doubt continue to do so for quite some time. Nonetheless, trends today suggest that in the absence of unforeseen events certain technical and organizational forms will most likely be characteristic of twenty-first-century capitalism.

How should these forms be described? In an influential work Piore and Sabel have argued that the coming period will be characterized by what they term “flexible specialization”.9 On their view, mass-production markets are now saturated, and sudden shifts in consumer demand have become more frequent. In response to this the goal of flexible specialization is to attain “economies of scope” rather than economies of scale, that is, to institute economically efficient short runs of diverse products.

Microelectronics technologies help provide this flexibility; they often allow new product lines to be introduced simply by typing in new programs. Decentralized worker-run firms are in the best position to actualize the potential of these technologies. They are not hampered by slow-moving bureaucratic hierarchies, and they develop the most committed work force. Fortunately, the costs of flexible technologies have been declining rapidly, bringing them within the reach of small-scale worker cooperatives. The regional organization of these small firms into flexible networks bound together by relations of trust completes the flexible specialization model.

There are a number of problems with the claim that contemporary capitalism is evolving towards flexible specialization as defined by Piore and Sabel. While many large Fordist firms have been “downsizing”, they have certainly not been fragmenting into a series of small worker-run firms. Economic power remains disproportionately in the hands of a relatively small number of firms, whose ability to organize production and distribution on the global level is growing, not shrinking. Also, there is little evidence that mass-production markets are saturated; demand for autos and televisions, for example, remains a high

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7 The growth of state involvement in the economy was absolutely crucial to Fordism. The economic role of the state, however, is outside the range of the present work. See Ernest Mandel’s discussion of the state in Introduction to Marxist Economic Theory, New York: Pathfinder Press, 1970, pp. 54-78.


percentage of overall consumer demand. So it is mistaken to hold that economies of scale are no longer significant today.

A second influential perspective, post-industrialism, is no less questionable. According to defenders of this view, the centrality of manufacturing in Fordism is giving way to a period in which the service sector predominates. Certainly the rise of services has been a characteristic of recent economic developments. But many activities ordinarily characterized as services are themselves a part of manufacturing, for instance, the computer programs that run machine tools. Other services are auxiliary to manufacturing in the sense that if the manufacturing activities were to disappear, the services would soon fade as well. Examples include banks that specialize in loans to manufacturers, advertisers of manufactured products, lawyers who draw up contracts between suppliers and assemblers, and so on.

Finally, the core of the post-industrial economy is commonly taken to lie with information-intensive activities. But information-intensive activities require information technologies, and these must be produced in an industrial sector. In the light of all these considerations, it makes far more sense to say that the epoch beyond Fordism is one of increasing industrialization than it does to speak of a sudden shift to a post-industrial economy.

A consensus is emerging among social theorists that Fordism is giving way to neither flexible specialization nor post-industrialism, but to something that can be termed “lean production”. Defenders of this perspective follow Piore and Sabel in emphasizing the importance of programmable multifunctional machines, capable of switching from one production application to another at low cost. They also agree that work relations in the coming period will transform the Taylorism that characterized Fordism, and that networks of firms will come to be of increasing importance. In the lean-production model, however, there is no assumption that worker-owned firms will dominate, nor that firms will be relatively small-scale. Japan, not the small firm-led production networks that Piore and Sabel describe in the “Third Italy” of Emilia-Romagna, provides a better sense of where capitalism is going.10

The authors of an influential study of the global automobile industry, The Machine That Changed the World: The Story of Lean Production, write:

(1)In the end we believe lean production will supplant both mass production and the remaining outposts of craft production in all areas of industrial endeavor to become the standard global production system of the twenty-first century.12

In the sphere of consumption, lean production is conjoined with a variety of information technologies that allow firms to track consumer behavior in great detail. This enables them to grasp both nuances in consumer demand and shifts in demand to a much higher extent than was possible in Fordism. Flexible production technologies then allow producers to react to this information much more quickly as well. As a result a greater range of products is offered to consumers than in Fordism, and product runs tend to be of shorter duration. The enhanced significance of consumer demand is reinforced by another crucial feature of the system as a whole, the “just-in-time” mode of organizing the various stages of production and distribution.13 In Fordism, high levels of inventory would pile up in the hope that they could be sold later. In lean production inventories are kept low, and only replenished if information regarding sales shows this to be warranted. When that information comes, it sets off a chain of events: information that a completed

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11 In fact Bennett Harrison shows that takeovers by foreign multinationals in the Third Italy and the emergence of homegrown multinationals such as Benetton refute the idea that the future of capitalism even in Italy lies with small firm-led networks (Bennett Harrison, Lean and Mean: The Changing Landscape of Corporate Power in the Age of Flexibility, New York: Basic Books, 1994).
product is needed is transmitted back to final assembly; requests for the different parts required for final assembly are then transmitted back to the places where partially-finished goods are produced; and so on, all the way back to the transmission of requests to suppliers to deliver raw materials and parts to the plant. Each step in the production and distribution process completes its task on an "as needed" basis, that is, "just in time" for the results to be used by the next stage in the process. Everything is kept "lean" in the sense that only that required for the next stage in the process is produced by the preceding phase. The final elements in this initial sketch of lean production are the networks that bind firms together both formally and informally. It is obvious that just-in-time systems of production and distribution require much closer coordination among suppliers, assemblers, and distributors than was the case in Fordism. Another example of network coordination is the process of "concurrent engineering", in which products and their parts are designed simultaneously by teams of engineers from both the assembly company and its suppliers.

In broad terms, at least, some sort of transition from Fordism to lean production seems to be occurring in key sectors and regions of the capitalist economy. It is not surprising that writings in the business press reflect this transition. What is surprising, perhaps, is the extent to which these writings now acknowledge the validity of criticisms of Fordist production that have been made by leftists for decades. As we shall see below, it is widely granted today that attempts to enforce a strict division between mental labour and manual labour are inherently alienating. So too are ways of organizing the labour process that condemn workers to the repetitive performance of a single task. There is also a widespread acknowledgment in the business press that alienation permeated the realm of consumption in the Fordist period, especially in the manipulations of mass advertising. The antagonistic relations between assemblers and their suppliers and distributors in Fordism have been subject to fierce criticism in the business press as well. In the heyday of Fordism writers in the business press denied vehemently that the system had any fundamental flaws whatsoever, and did all they could to marginalize those who thought otherwise.

When it comes to lean production today, needless to say, there is no suggestion in the business press that this new system might have any fundamental flaws. Marxists might be prone to dismiss this literature out of hand on the grounds of its obviously apologetic nature. This, I believe, would be a mistake. The defense of lean production found in the business press is the latest variant of capitalist ideology and ideology has its material effects. Arguments initially formulated in the business press often make their way to the popular press, and thereby come to affect the consciousness of working men and women. This can in turn influence political action. If the ideology of lean production is not addressed critically, it will be more difficult for consciousness and forms of action to arise in the working class.

The most important forums for this critical analysis are the shop floors, the offices, the union halls, and the political settings where workers discuss among themselves whether the claims made by the apologists of lean production cohere with their own experiences. This Notebook hopes to contribute to such discussions. I shall examine a representative sample of writings on lean production from the business press, concentrating on those themes that are most opposed to a Marxist perspective.

Before beginning, it is worth noting that there are ways in which the rise of lean production obviously corroborates arguments made by Marx. Three can be briefly mentioned here. Marx asserted in Volume I of *Capital* that there is a tendency for the concentration and centralization of capital. "Concentration" refers to the increasing scale of production, as firms that were previously local and regional expand in order to capture national and global markets. "Centralization" refers to the process whereby the accumulation process results in larger and larger units of capital, as smaller...
firms are absorbed into bigger ones or go bankrupt.

The process of concentration and centralization increases apace with lean production. The main assembly firms are seeking to increase their production in order to capture global markets. Their suppliers and distributors either themselves have global ambitions, or at the least hope to find a niche in one of the emerging continent-wide markets (Asia, North America, Europe); this too represents the concentration of capital. Not all assemblers and not all suppliers will succeed in attaining this goal; shake-outs, mergers, and takeovers regularly recur, leaving fewer and fewer firms in control of more and more of global markets. All of these processes brings about larger and larger units of capital, that is, the centralization of capital.\(^1\)

Lean production also provides an obvious confirmation of a point made by Marx in Volume 2: in capital there is an immanent drive to reduce circulation time. The move to lean-production systems is explicitly devoted towards precisely this objective. The just-in-time system is designed to make each stage in the production and distribution process respond rapidly to the demands of the succeeding stage, thereby reducing circulation time. All of the innovations designed to reduce "slack" and make production and distribution "lean" are also clearly designed to reduce circulation time, for instance, the removal of layers of bureaucracy within firms, and the co-ordination of relations with distributors in order to minimize stocks of unsold inventories. General purpose machines such as robots, computer-controlled machine tools, and automatically guided vehicles, all have the effect of speeding up the process of transforming raw materials to finished products. The drive to shorten product cycles through measures such as concurrent engineering is another feature of the lean-production model that aims at lowering circulation time, as are attempts to monitor shifts in consumer demand.

A third way in which the lean-production system provides a clear illustration of a Marxist claim concerns constant capital. At the beginning of Volume 3 of *Capital* Marx argued that there is a necessary tendency in the capitalist mode of production for innovations lowering constant capital costs to be sought. One central intent of the just-in-time production system is to reduce to a minimum the amount of raw materials and partially completed parts shipped by suppliers. This is matched by the commitment to reduce "waste as much as possible in the production process. All these measures lower constant capital requirements, confirming Marx's thesis.

For the writers for the business press, however, all of this is only a small part of the story. In their view, when all is said and done the rise of lean production leaves Marxian theory in shambles. The problems that beset Fordism (and earlier epochs in capitalism as well) are not inherent in the nature of capitalism, as Marxists have thought. With lean production these problems dissipate. Marxists did not anticipate this development, a development that thoroughly refutes the Marxist framework.

In the literature on lean production in the business press three major claims are hammered home again and again: in lean production there is no essential antagonism between labour and capital; true consumer sovereignty is instituted for the first time; and relations among different units of capital are now characterized by unprecedented levels of trust and cooperation. If these claims were true, Marxism would indeed be thoroughly refuted by historical developments in capitalism. The following sections examine each of the above three claims in turn. They make the case that, as in the past when ideologues have pronounced that capitalism is about to fulfill the utopian promises made on its behalf, the proclamations of capitalist utopia are wrong. At the conclusion of the Notebook I argue that only participatory, socialist democracy can both fulfill the unredeemed promises of the apologists of lean production and avoid the structural shortcomings that have plagued bureaucratically-planned economies.

I. The Capital/Wage Labour Relation in Lean Production

Many of the general arguments proposed by defenders of lean production regarding the capital/wage labour relation have been made before. Echoing Adam Smith's notion of the "invisible hand", lean-production theorists claim that the rational self-interest of the owners and controllers of capital leads them to transform work relations in ways that further working people's interests. In other words, the very pressures of the market that lead to the introduction of lean-production systems also act as an "invisible hand", ensuring that the interests of both employers and employees are met. A number of variants of this claim follow.

1. The successful enterprises in the epoch of lean production will be those that continuously innovate. Continuous innovation can be best furthered when the factory and the office become laboratories where the intellectual labour of shop-floor workers is fused with that of researchers and engineers. In brief, capital's pursuit of continuous improvement ("kaizen" in Japanese) leads to an overcoming of the split between mental labour and manual labour, to a mobilization of the intelligence of the wage labourer, to a labour process in which workers continually confront creative challenges. All of this is in the interests of wage labourers.

2. Tasks such as simple machine repair, housekeeping, materials-ordering, quality control, and so on, do not add value to the final product. The owners and controllers of capital thus have an incentive to reduce such tasks; this is part of what it means to become "lean". These tasks can be reduced if production line workers incorporate these tasks into their labour process, thereby eliminating the need for separate departments of indirect workers. For this to occur, production line workers must become multiskilled. Lean production thus involves the end of detail labour; no longer is each worker assigned a single task to perform repeatedly. Given the tedious nature of detail labour, this development is in the interests of labour.

3. Lean production employs highly complex technology systems. When a number of complex production systems are combined, the result is a system of such hypercomplexity that it is impossible for engineers to foresee all the results that may occur. Under these circumstances it is inevitable that emergencies will arise. If workers have been vigilant, curious, and committed, and if they have developed the requisite high level of skill, chances improve that they will be able to respond to these emergencies successfully. If not, catastrophes may well occur. The cost of high-technology production systems guarantees

15 "In the factory as laboratory the distinction between intellectual and physical labor that Marx indicated and that Harry Braverman raised to the fundamental contradiction of modern capitalism is at some fundamental level mitigated. (The new world of manufacturing will not be an environment of smart machines and automaton-like workers. In fact, this mode of organizing production will surely fail.)" Martin Kenny and R. Florida, Beyond Mass Production: The Japanese System and Its Transfer to the U.S., Oxford: Oxford University Press, 1993, p. 68. See also Masaaki Imai's Kaizen, Cambridge MA: McGraw-Hill, 1986.
that extensive downtime is quite expensive. And so the owners and controllers of capital have a clear incentive to develop a skilled workforce that can avoid catastrophes.17

4. In lean production a consumer order provides the signal for a delivery to be made; a delivery order provides the signal for final assembly; a final assembly order provides the signal for a finished part to be delivered, and so on all the way back to the initial act of production undertaken by a supplier. The goals of this “just-in-time” production are to reduce inventory costs to the greatest degree possible, and to shift rapidly from one product to another within a product family. The resulting lack of inventories, however, makes lean production very fragile. When extensive inventories are present, a stoppage in one part of a production system does not necessitate that production cease elsewhere. Without the buffer provided by inventories, a stoppage in one place means that production in the system as a whole soon comes to a halt. This vulnerability can only be removed by ensuring that workers throughout the system lack the motivation to plan stoppages, and have the ability to reverse quickly whatever stoppages occur by chance. Both imply that the owners and controllers of capital commit themselves to meeting the interests of labour.

5. If the intelligence of the worker is to be mobilized, if the worker is to develop a variety of distinct skills, and if worker vigilance and curiosity are to be sustained, then the worker cannot be treated as an isolated individual. The best way to attain these goals is to have workers participate in teams in which a variety of different tasks are rotated. This benefits management by leading to a more productive workforce. Quality improves, it is easier to cover for absences and turnover, and there is a larger available skill base for overtime and emergencies. Most importantly, perhaps, teams bring about a collective intelligence that furthers the processes of innovation and diffusion.18 Workers benefit in a variety of ways; when teams rotate tasks the capacities of members are developed, boredom is alleviated, and the chance of injuries from repetitive motions is lessened.

6. The team structure has a number of profound indirect effects as well. If teams are to function effectively, they must have access to information regarding the enterprise, information that was once monopolized by the managerial stratum. Once workers are given access to this information, teams are in a position to take on managerial functions themselves:

(T)he degree of organizational integration made possible by the presence of networked real-time systems seemed to obviate the role of the manager as someone who supervised others, gathered information, and controlled communication.19

This allows firms to lower the indirect costs associated with lower-level management and supervisors. Just as significant is the effect on the organizational dynamic. The traditional claim of management to power and status rested on its privileged access to knowledge. With this gone, the new utopian claim, workplaces structured in terms of top-down exercises of authority give way to workplaces organized according to the principles of dialogue:

Consensus decision making provides an environment where ideas can surface, ensures thorough dissemination of information, and mitigates problems associated with lack of commitment to new decisions.20

Managers are but one voice in this on-going dialogue, and the most successful managers will be those who best listen to the voices of others:

In addition to the quality of skills, the fruitfulness of such collaboration will depend largely upon the grace and enthusiasm that individuals bring to the participative process.

Managers who place a premium on control and

20 Kenney and Florida, p. 42.
workers who feel disaffected do not make good
colleagues, for the spirit of hypothesis generation
and testing is above all a collegial one.21

Lean production thus leads to a "new
covenant" between labour and management, aiming to create "relations of equality"
within a "post-hierarchical" learning
environment at the workplace. Of course
this does not mean that there are no longer
any differentials of knowledge, responsibility,
or power. But "they can no longer be
assumed. Instead, they shift and flow and
develop their character in relation to the
situation, the task, and the actors at hand."22

7. If skilled and attentive workers are as
absolutely crucial to the success of lean-pro-
duction enterprises as the above arguments
suggest, it follows that those who own and con-
trol capital cannot count on meeting their
objectives if workers are treated as replaceable
parts. Those who own and control capital must
incorporate the workforce as a partner, offering
guarantees of employment and profit-
sharing to keep labourers committed to the
firm. This is in the interests of management;
when there is little labour mobility shared
knowledge doesn't leak and the costs of train-
ing aren't wasted. And this is in the interest of
the workers, who attain a level of security far
beyond the norm in the Fordist period. The
result is a system of "reciprocal obligation"
rather than one of mutual antagonism:
To make this system work, of course,
management must offer its full support to the
factory workforce and ... make the sacrifices to
ensure job security that have historically been
offered only to valued professionals. It truly is a
system of reciprocal obligation.24

Writers in the business press, of course, are
well aware of the present high levels of job
losses in the U.S. economy and elsewhere.
They insist, however, that this is a shortsighted
strategy that must be reversed if firms wish to
be successful in the medium-to-long term.25

If these arguments gave the whole story of
work relations in lean production, Marx's per-
spective would indeed be hopelessly irrelevant
to contemporary capitalism. The Marxist
claim that a fundamental antagonism between
labour and capital is inherent in this mode of
production would be refuted once and for all.
Before we jump to the conclusion that the
Marxian account of the capital/wage labour
relation has been superseded, we should first
recall exactly what that account is.26

Marx's Theory of the Capital/
Wage Labour Relation

In Volume I of Capital Marx argued at great
length that capitalism rests upon a basic
inequality. One class possesses sufficient eco-
nomic resources to purchase means of pro-
duction and means of subsistence, while
another class lacks such resources. From this
asymmetry in property relations Marx went on
to derive a necessary tendency for structural
coection to arise. Those without access to the
means of production and subsistence are
forced by the structure of their situation to sell
their labour-power to those who own the
means of production and subsistence. For
Marx, there is a direct link between this con-
cept of structural coercion and the notion of
exploitation: those who own and control cap-
tal are able to ensure that the terms of the wage
contract allow them to appropriate an econom-
ic surplus created by wage labourers. They also
necessarily tend to transform the labour
process, in order to increase the amount of
surplus produced by the workers. Marx
termed this transformation the real subsump-
tion of labour under the alien power of capital.

Marx derived the claim that there is a funda-
mental antagonism between labour and capi-
tal from the persistence of structural coercion,
exploitation, and real subsumption in capital-
ism. Marx's account would be irrelevant to

21 Zuboff, p. 201.
22 Zuboff, pp. 309, 394, 401, 401-02.
23 Haruo Shimada and J. MacDuffie, Industrial Relations and
"Humanware", Cambridge, MA: Sloan School of Manage-
ment, 1986.
24 Womack et al., p. 102.
25 This is one of the "paradoxes" stressed by Charles Handy
in his recent work, The Age of Paradox, Cambridge, MA:
26 See Tony Smith, The Logic of Marx's 'Capital', Albany, NY:
State University of New York Press, 1990, Chapters VI and VII.
capitalism in the age of lean production if and only if these three conditions no longer hold.

**Structural Coercion in Lean Production**

It is possible to extract an argument from the lean-production literature justifying the assertion that structural coercion does not hold in this new model. The argument rests on the claim that lean production marks a radical rupture with past labour practices in the history of capitalism. Labour costs have usually been categorized as variable costs to be kept as low as possible by management. This changes with lean production, which supposedly demands high levels of training, a deep commitment to the process of continuous improvement, and the willing cooperation of the work force when new technologies are introduced. All three demands can be best met if workers are granted lifetime employment. When workers do not abandon the firm that has trained them, the costs of training can be fully recouped. When workers are assured that they will not be let go as a result of their productivity-enhancing suggestions, they are more forthcoming with such suggestions. And these assurances also alleviate any concern workers might have that new technologies will eliminate their jobs.

Workers enjoying guaranteed employment might be thought to escape from the structural coercion discussed by Marx. After all, they do not have the threat of unemployment hanging over their heads day in and day out. If this were indeed a feature of the lean-production model, then one of the three considerations underlying Marx's claim that there is a fundamental antagonism between labour and capital could be thought to no longer hold.

Against this line of argument the following considerations can be raised:

- In lean-production systems today only a relatively small proportion of workers (those in larger "core" plants, primarily manufacturing assembly plants and office headquarters) are offered anything approaching lifetime-employment guarantees. A much larger "periphery" of workers employed by smaller subcontractors are not. In Japan, for instance, lifetime job security is offered to less than one third of the workforce.

- Does the lean-production model include only these core enterprises? No. The advocates of the model themselves stress how these core firms are connected in networks with subcontractors and distributors. And so any discussion of work relations must acknowledge that the vast majority of workers in even the most paradigmatic lean-production systems are not granted lifetime employment.

- There is nothing in the lean-production model that prevents the relatively small percentage of workers enjoying lifetime employment from declining over time. Even without lay-offs, jobs will still be eliminated in the core firms by attrition whenever productivity advances outstrip growth in market demand and the introduction of new products. When this occurs, a growing number of workers will find themselves working in part-time or temporary employment, where employers have the "flexibility" to hire or fire them at will. In other words, the de facto job security of the labour force as a whole may well decline even as individual workers benefit from job guarantees. For the labour force as a whole, structural coercion may thus be increased, not alleviated, by lean production.

- Lean production has proven more productive than "Fordist" production. The
firms that initially mastered the technologies and organizational structures associated with it have won considerable surplus profits as a result. Guarantees of employment are relatively painless to provide when a firm is among the first to shift to more profitable technologies and modes of organization. As innovations are diffused, however, the initially innovating firms face the threat of losing these surplus profits. As lean production spreads and profits come under increasing pressure, job losses may soon follow, job guarantees or no job guarantees. In other words, the job guarantees that defenders of lean production proclaim are intrinsically tied to this production system may represent temporary benefits stemming from the competitive position of initial innovators. If so, we cannot say that a basic transformation of the capital/wage relation has occurred.\textsuperscript{10}

- In this context it is worth pointing out that in lean-production firms the employment “guarantees” that are made are management policies, not formally guaranteed rights. Management retains the ultimate “right” to fire. This right is extremely important to those who own and control capital. Again and again they have refused to allow employment guarantees to be written into contracts, on the grounds that this would limit their “flexibility”.

- The owners and controllers of capital retain the ultimate power to shut down plants and invest elsewhere. Even in the absence of an explicit threat to take this course of action, those who sell their labour-power are forced to take the possibility into account. And even if currently-employed workers were assured that they would be offered positions at a new site, the disruption this would impose on workers and their communities is often quite severe. In this case too the implicit threat of capital flight structures the overall situation. Wage labourers are coerced to accept contracts they would not accept in the absence of this threat. With developments in communication and transportation technologies, the implicit threat of capital flight to overseas plants and offices weighs more heavily upon all categories of workers with each passing day — job guarantees or no job guarantees.\textsuperscript{11}

- Let us assume for the sake of the argument that binding lifetime job guarantees are in place. This may not lessen structural coercion so much as simply transform how the coercion operates. Instead of being forced to seek employment from some unit of capital or other, now the worker may be forced by the logic of the situation to continue in employment with a particular unit of capital. The possibility of working for another employer can be removed as a viable option in two ways. If

\textsuperscript{10} For a number of illustrations of this thesis, see Ben Watanabe, “Promise of ‘Lifetime Employment’ Is Disappearing in Japan”, Labor Notes, May, 1993.
the training provided to workers in lean production is job-specific, the worker suffers severe penalties for shifting to a new place of employment. The organizations of wages and pensions can also coerce workers to remain at a given place of employment. In Japan, the rhetoric of class harmony and job satisfaction disguises a quite different basis for the "loyalty" of the worker to a firm. Workers leaving firms automatically start at the very bottom of the pay scale in their new place of employment, so that "jumping ship would be quite pointless". And almost all Japanese workers receive a lump-sum payment at time of retirement, rather than a pension. Any worker who resigns prematurely receives either a mere fraction of this sum or nothing at all.

The above points, I believe, are sufficient to establish that the baseline condition of the working class as a whole in lean production continues to be defined by a lack of access to the means of production and means of subsistence. This remains the case despite the (limited) lifetime-employment guarantees associated with this system. The first of the three considerations introduced by Marx to justify the assertion that there is a fundamental class antagonism in capitalism remains quite relevant in the epoch of lean production.

Exploitation in Lean Production

Turning to the question of exploitation, Marx's general definition of this concept has two components. First, the working period is divided into two parts. During part of the period workers engage in necessary labour, that is, the labour necessary to produce the goods and services required for them and their dependents to survive at the standard of living established in the given social context. During the remainder of the period they engage in surplus labour, producing a surplus product that is not distributed back to them. The second component of the concept of exploitation is that this surplus product is then appropriated by another class. In capitalism, where the surplus product takes the form of commodities with exchange value, exploitation is a matter of producing surplus value, that is, economic value exceeding the value received back by workers in the form of wages. This surplus value is then appropriated by the capitalist class.

It is beyond dispute that lean production is directed towards increasing the amount of labour performed. This has both an intensive and an extensive dimension. Intensively, the whole point of lean production is to produce more with less, to increase economic output per unit of labour-power purchased. This is accomplished by eliminating the "pores" in the working day. In traditional Fordist auto-

31 Evidence that this is the case is found in Harley Shaiken's studies of the introduction of lean-production plants in Mexico. He has shown that plants there have attained quality and productivity levels rivalling the best facilities in Japan within 18 months to three years of start-up, employing young workers with basic education and little industrial experience. See also Castells' comment: "The new informational mode of development allows capitalism to restructure itself in the dream of a free movement of endless circulation, unlimited by the rigidity of societies and political institutions. To be sure, business corporations do have to relate to national political systems, and dominant classes are still socially specific. Yet, their organizational logic can now follow a pattern of variable geometry, in which specific interests are fulfilled in different spaces and different times, in a dynamic whose logic is only found in the structure of flows of information and power. Such structure dramatically undermines the process of social control over economic development. Cities, regions, localities, become powerless in their efforts to seize the power impulses upon which their daily life depend." Manuel Castells, "Social Movements and the Informational City", Wattsushiba Journal of Social Studies, No. 21, 1989, p. 203.

32 Womack et al., who surely count among the strongest defenders of lean production, believe this is the typical case: "Brilliant team play qualifies workers for more and better play on the same team but makes it progressively harder to leave. So a danger exists that employees (may) feel trapped in lean organizations. They do not propose a solution to this problem beyond the vague — it not vacuous — statement that, "Western companies, if they are to become lean, will need to think far more carefully about personnel systems and career paths than we believe any have to date." (Womack et al., p. 251)

33 Womack et al., p. 251.
mobile plants, for example, workers actively labour 45 seconds each minute. In the typical lean-production auto plant, workers are engaged in productive activity for around 37 seconds a minute. If we assume a ten-second-a-minute differential applied to a plant of 2,000 workers, this speed-up results in 2,667 extra work-hours being performed over the course of an eight-hour shift. 13,335 extra work-hours are added over a five-day week. This is equivalent to hiring an extra 333 workers to work a 40-hour week. Or, to put it another way, this is equivalent to each worker performing the equivalent of more than an extra day’s labour every 5-day week.34

More labour is also performed as a result of an extension of the labour process. Workers in lean-production plants typically are required to submit to forced overtime. They also receive fewer vacation days.35

Does this increase in labour intensity and in the extension of labour count as an increase in the economic surplus produced? The answer would be no if the collective worker received back the fruits of this increased labour in the form of higher wages. They do not.36 Nor do they democratically control how those fruits are to be socially allocated. Defenders of lean production talk at considerable length about blurring the boundaries between labour and management, about shifting management functions to the shop floor, about moving away from authoritarian hierarchies. But for all the talk of worker participation in the team model, the ultimate goal remains the extraction of surplus labour by capital. When this is kept in mind, arguments that Marx’s category of exploitation has no place in the new epoch of lean production lose their force at once.

The Real Subsumption of Labour in Lean Production

It is now time to turn to the final component of Marx’s argument for the inherent antagonism of labour and capital, the real subsumption of labour under capital. Does this too continue to operate in the epoch of lean production? In the initial phase of capitalist labour relations, the putting-out system, merchant capitalists contracted with artisans who then produced commodities for them. In the following period industrial capitalists hired ex-artisans and ex-peasants as wage labourers in factories. These arrangements left control of the details of the labour process in the hands of the work force. Marx refers to such arrangements as instances of the formal subsumption of labour under capital. In terms of the social relations between labour and capital relevant here, the formal subsumption of labour does not introduce any new element beyond those considered under the headings of structural coercion and exploitation.

All this changes when the owners and controllers of capital impose a transformation of the labour process in order to increase the amount of surplus value produced in a given period of time. This transformation, which Marx termed the real subsumption of labour, introduces a new dimension to the capital-wage labour relation, the imposition of capital as an alien force on the labour process.

If we examine the literature on lean production in the business press, three sorts of arguments can be found implying that this alienation has been overcome. The first rests on a distinction between a “good” and a “bad” version of Taylorism. Defenders of the lean-production model agree that the Taylorism in Fordist work practices is alienating. Industrial engineers undertake an extensive series of time/motion studies, and then impose a set of standardized procedures on the work force based on those studies. This is the “bad” form of Taylorism. Lean-production systems cer-

35 Prior to the spread of lean production to the U.S. and Europe, workers in Japanese industry averaged roughly 200 to 500 hours more than workers in the U.S. and Europe (Kennedy and Florida, p. 10). It is hardly surprising that a 1986 survey by the All Toyota Union discovered that 124,000 out of 200,000 members suffer from chronic fatigue.
36 For a study of how advances in productivity from lean production are compatible with lower real wages, see Eugene Proh’s study of Italy, “Industrial Transformation and the Employers’ Offensive”, International Marxist Review, No. 15, Spring 1994. See also Shaiken’s study of Mexico, cited elsewhere in this Notebook.
tainly do not leave it up to the members of the work force to decide for themselves how production should be structured from day-to-day. Once a worker has been assigned a task, he or she must adhere to a rigid set of procedures governing each detail of the labour process, procedures determined by time/motion studies. But these standards are no longer imposed on the work force from above. In lean-production plants time/motion studies are undertaken by work teams themselves. As a result, adherence to a set of standardized procedures loses its alienating character. This is the "good" form of Taylorism.37

The distinction between a bad form of Taylorism and a non-alienating form has a number of problems. For one thing, the attempt to get those who are subject to an alien power to participate in their own subjugation is one of the oldest tactics of power. The claim that the employment of this tactic in itself removes alienation must surely be rejected. Also, it is simply not the case that all workers in lean-production plants participate in the setting of work standards. In some cases these standards are set before a plant opens by industrial engineers and team leaders. In many North American transplants, they are simply taken over from Japan.

Third, lean production has brought about the deskilling of numerous categories of workers, including many of those who are counted as "multiskilled" by the new utopians.38 For all these workers the structure of the labour process obviously continues to be imposed by capital. In other words, the "good" form of Taylorism at best addresses the situation of some, not all, of workers within the lean-production model.39

But even workers who do participate in time/motion studies and the formulation of work standards are subjected to an alien power whenever the general parameters of the labour process are removed from discussion. Despite the rhetoric of cooperation, the long-term strategic objectives of the labour process are imposed by managers appointed by those who own and control capital. They are thus imposed on workers by an alien power. Another relevant matter here is that lean-production systems making use of teams and rotations significantly reduce work rules, job classifications, and the importance of the seniority system. This leaves management free to impose job assignments at will. Those identified by management as having "an attitude problem" (those, for example, who insist that safety regulations be rigorously followed) can be transferred to the most arduous jobs in the plant until they are forced to quit. The elimination of classifications and the security system also makes it impossible for workers to transfer to less physically and psychologically demanding jobs as they get older.40 In these two sorts of cases crucial aspects of the labour process are defined by forces alien to the workers themselves.

A related point is that the lean-production system is structured so as to subject individual workers to considerable peer pressure. For example, teams are set up so that when a worker is absent or has a bad day this places an immediate and obvious burden on his or her co-workers. In this manner a tremendous amount of peer pressure is created to not miss work and to submit to the established work pace. This pressure retains its force even when

37 This argument was developed by Paul Adler, in his article "Time and Motion Revised", Harvard Business Review, Jan.-Feb., 1993, p. 98.

38 Consider the case of an operator who performs a variety of tasks in the work process. If each of these tasks taken singly does not involve a high level of skill, does the mere fact that they are combined result in a more highly skilled worker? (Mike Parker and Jane Slaughter, Choosing Sides: Unions and the Team Concept, Boston: South End Press, 1988, pp. 24-25)

39 Whether lean production leads to a net deskilling in the work force as a whole is much less clear. As technologies and work organizations change, deskilling and reskilling are always taking place simultaneously, and it is often difficult to measure which dominates in the economy as a whole. See Keith Mann's "Class Struggle, Skill and the Productive Process Today", International Marxist Review, No. 15, Spring, 1994. The following passage from Capital should also be kept in mind: "A large-scale industry, through its very catastrophes, makes the recognition of variation of labour and hence of the fitness of the worker for the maximum number of different kinds of labour into a question of life and death. This possibility of varying labour must become a general law of social production, and the existing relations must be adopted to permit its realization in practice." (Karl Marx, Capital, vol. 1, New York: Vintage, 1977, p. 618)
a worker is ill, or should be home taking care of an ill family member. This arrangement defuses labour-management conflicts at the cost of aggravating conflicts among workers. The real subsumption of labour under the alien force of capital is disguised here, but it is no less present: Managers at Toyota, Nissan, and numerous transplant suppliers suggested that teams provide the peer pressure required to keep most workers in line.41

Finally, the commodity form, the money form, and the capital form all operate as alien forces operating behind the backs of economic agents in capitalism. They impose the imperative to reduce socially necessary labour time, regardless of the social costs of doing so. Time/motion studies determining standardized procedures are an expression of this imperative, whether or not workers participate in these studies. In either case, the members of the work force are still forced to submit to the power of alien social forms, to the force of the law of value. I conclude from all that has been said that the first attempt to show that lean production overcomes alienation in the labour process fails.

A second argument rests on the “fragility” of production in lean-production plants. Suppose, the argument goes, we grant that the potential for the owners and controllers of capital to impose their (alien) will upon workers does increase with lean production. It cannot be denied, after all, that microelectronics technologies provide opportunities to monitor the work force, to reduce the work force, to increase work loads, to institute speed-ups, and so on. Still, having a potential and actualizing this potential are two quite different matters. The lean-production system demands the sincere cooperation of the work force to succeed. If management were to exercise its power in a manner the work force found alien, labourers could simply refrain from contributing suggestions, or act in a manner that throws off the delicate balance that is the just-in-time delivery system. As a result of this fragility, “It is in management’s own interest that any abuse of management prerogatives should meet with swift and certain penalties.”43 In this manner alienation in the labour process is overcome.

This is a very striking argument, but it is also beset by a number of problems. It is true that just-in-time production systems cannot work unless labourers are committed and diligent. It is quite a jump, however, to conclude that management must therefore accommodate the interests of labour at the point of production. There are a great many other strategies for ensuring commitment and diligence, strategies that are especially likely to be successful in the absence of strong independent unions and high levels of class consciousness.

Besides the peer pressure just mentioned, failure to keep up with the line can result in pressure from management, reduced perks, undesirable new assignments, and possible discipline, with the fear of unemployment always lurking in the background.44 Ideology may play a role here too. The ideology that management has a “right” to impose its will on the labour process retains its force among certain groups of workers; to the extent that it does, it too makes the system less “fragile”.

The owners and controllers of capital can also rely on many workers having a strong psychological desire to find meaning in their work lives, even when central aspects of the labour process are imposed upon them externally. Lastly, fragility can also be overcome if problems in the workplace are personalized, that is, blamed on particular managers rather than the general dynamics of capitalist production.

This is not to say that the just-in-time system does not have any weak points. There are indeed many points at which it is vulnerable, and which organized workers can pressure in the course of struggles. But this fragility is

40 A “lifetime” guarantee of a job means little if it is attached to a job that cannot be performed by people in their fifties or sixties: “Because most assembly line jobs are so demanding in traditional auto plants, workers look to the off-line ‘desirable’ jobs as a form of job security. If they cannot keep up the pace when they get older, they can hope that they will have enough seniority to select a job that matches their capabilities. [In flexible production plants] these jobs do not exist.” (Parker and Slaughter, p. 105)
41 Kenney and Florida, p. 279.
42 Adler, p. 108.
not extensive enough to magically abolish the need to struggle. Fear for the fragility of the system among managers is not so great that they automatically seek to harmonize their interests with those of labour.

This brings us to the final argument for the irrelevance of the concept of alienation in lean-production labour processes. Unlike the two just considered, this argument grants that there are aspects of the labour process in lean production imposed upon the work force. The labour process in lean-production plants is characterized by hyper-intensive work; once again, in traditional manufacturing plants the labour process takes up approximately 45 seconds every minute, while in lean-production plants the figure is 57 seconds. This unrelenting pace is inflicted on labour by capital. Many of the strongest advocates of lean production freely admit that this increases worker stress. This increase in stress is not an unintended by-product of lean production; the entire point of just-in-time production is to maximize the stress level, since anything less represents an “excess” that could be made “lean”.44 Defenders of lean production, however, insist that the process of continuous improvement presents never-ending challenges, mobilizing the workers’ intelligence and creativity. This, it is alleged, fully compensates for any increase in stress.45

There are two major difficulties with this argument. First, it is not so much an argument as a dogmatic assertion. Where is the evidence substantiating the conclusion? Production workers on Toyota’s assembly lines in Japan are reported to make 20 motions every 18 seconds, or a total of 20,600 motions in a working day. This leads to a level of stress that threatens both physical and psychological health. In the extreme case it can lead to karoshi, “sudden death from overwork”. According to the citizen’s volunteer group Karoshi Dial 110, some 1500 cases of karoshi have been reported as of June 1990.46 Where is the proof that the challenges faced by the work force are sufficiently high to compensate for this level of suffering and risk?

Second, is this the sort of issue that management consultants are able to adjudicate in the first place? Surely only those who have experienced both the stress and the challenges of the lean-production workplace are in a position to weigh the extent to which the challenges compensate for the stress. They are the only ones with the necessary experience to know exactly how the trade-offs here ought to be made. Perhaps from the workers’ perspective it would be better to have a somewhat smaller number of chances to exercise their creativity in return for a lower level of stress. Better yet would be a work process designed to evoke the same degree of creativity in a less stressful environment. The lean-production system rules out the work force making these sorts of evaluations. The management of lean-production firms have consistently emphasized that the 57-second-a-minute pace is not a subject for negotiation.47 No writer in the business press has criticized them for this. And so a crucial aspect of the labour process is not decided by the group that bears the consequences of the decision, the labourers. It is instead imposed upon them. Here too the conclusion seems to be that capital operates as an alien power over these labourers at the point of production.

In the business press the defenders of lean production assert that in this new version of capitalism the fundamental antagonism between labour and capital is overcome. For this claim to be plausible it would have to be shown that structural coercion, alienation, and the real subsumption of labour under an alien force are overcome. I have examined the main arguments in the literature on lean production that could be used to make this case. All of these arguments are unconvincing. Does the rest of the case made by the new capitalist utopians fare any better?

43 Parker and Slaughter, p. 18.
45 Womack et al., p. 101.
46 Ben Watanabe, “Sudden Death From Overwork”, Labor Notes, June, 1994. Obviously guarantees of lifetime employment mean little if job-related physical exhaustion and mental strain lead to the destruction of health.
II. The Capital/Consumer Relation in Lean Production

The drive to mass-produce standardized goods provided the social mechanism most relevant to the shaping of the capital/consumer relation in Fordism. In the literature on lean production two fundamental criticisms of this dimension of Fordism can be found.

1. In the consumer market the social relation between consumers and capitalist enterprises is mediated by commodities. On the one side there is the consumer, with all his or her individual uniqueness. On the other side there is the mass-produced commodity. Uniqueness on the one side, standardization on the other; as long as a gulf persists here the commodity necessarily remains alien to the consumer, something that doesn’t quite “fit” his or her needs and desires.

It is true that in Fordism market segmentation separated the items of mass consumption into distinct niches according to class, geography, age, sex, race, and other categories. When Henry Ford proclaimed that consumers could have the Model T in any color so long as it was black, General Motors proceeded to take market share away from Ford by developing different products for different segments of the automobile market. But these segments were defined in the broadest of terms. According to the defenders of lean production, there still was no affirmation of the individual uniqueness of each consumer.

2. In order to convince consumers that standardized commodities could meet their unique wants, capitalist manufacturers and distributors developed the techniques of mass advertising during the Fordist epoch. The goal was to make potential customers, each of whom has his or her individual tastes, accept the homogeneity of mass-produced goods. Advertising came to invade more and more nooks and crannies of everyday life, bringing with it increasing exposure to inflated — if not fraudulent — claims. Images and music were used to bypass the conscious reasoning process and appeal directly to subconscious desires. Consumers, in brief, were subject to systematic manipulation in Fordism.

Consumer Sovereignty at Last?

If there is a gulf between consumers and the commodities they purchase, and if the only way to overcome that gulf is through manipulating the psychic dispositions of consumers, then we can hardly say that the capital/consumer relation is a harmonious one. Defenders of lean production, however, insist that there is no inherent antagonism between capital and consumers. The proof of this is that both of the difficulties that beset the capital/consumer relation in Fordism are practically eliminated in the newest variant of capitalism.

1. Technical and organizational changes associated with lean production have over-

48 I am referring here only to the relation between capital and final consumers, that is, individuals and households. Inter-capital buying and selling will be discussed in the next section.
come the gulf between the consumer and the commodity. The commodity is no longer a standardized product, but something that closely reflects the unique tastes of the individual consumer. The alienation of consumer and commodity is overcome by a continuous-feedback loop between the consumer and the design process.

The first step in this continuous-feedback loop is the use of various information technologies to gather and process information regarding patterns in consumer behavior. Greater information-gathering and information-processing capacity allows much more nuanced information regarding consumer desires. This information is continuously fed back from sales divisions and dealers to manufacturers, allowing much greater ability to distinguish various market niches. In principle, this information allows lean-production enterprises to define the limit point of a "segment of one", as they become informed about the product features desired by each individual consumer. Information technologies also allow manufacturers to discover shifts in consumer demands almost instantaneously.

Once micro-segments have been defined, the quick response of just-in-time production systems, combined with the flexibility of micro-electronics technology and a multiskilled labour force, allow manufacturers to adjust production to meet consumer needs, and to respond immediately to sudden shifts in consumer demands. In principle, lean production allows a run of a single product meeting the specification of a single consumer: "in the [new] corporation, market segmentation becomes market atomization."

The upshot of these developments is something distinct from both the customization of traditional artisan labour, and the mass production of the traditional factory, something that has been termed "micro-mass consumption" or "mass customization". Production occurs on an extensive scale as with the mass production of Fordism, but with much more attention to the unique needs of individual consumers. This does not mean that the low-overhead, low-cost mass commodities typical of Fordism will no longer be produced. For that matter, there will still be markets where artisans customize a product for individual buyers. The claim is instead that individual customization and mass consumerism will not provide the characteristic form of the capital/consumer relation in the epoch of lean production. The highest rates of growth are likely to be located instead in sectors devoted to "mass customization". With this, claim the defenders of lean production, the alienation of the consumer from the object of consumption, an alienation characteristic of Fordist consumption, approaches the vanishing point. For the first time in the history of capitalism true consumer sovereignty is instituted.

2. According to the business press, a number of developments associated with lean production suggest that mass advertising may play less of a role in everyday life than previously. First and foremost, the more the distance between the consumer and the consumable commodity is overcome, the less need there is for the manipulations of mass advertising:

The challenge of the new business era, with its virtual products, is to adapt the product to the consumer, not the consumer to the product. The integration of the consumer into lean production implies that there are significantly fewer "free-floating" consumers out...
there to be reached by mass advertising. Consumers who have participated in the design of a product through supplying personal data, filling out consumer surveys, learning about new products, participating in users’ groups, monitoring the information presented in computer bulletin boards by the company, customizing the product for their own use, and so on, have made a significant commitment of time and money to the product line of a given enterprise. As this commitment increases, it becomes less and less likely that they will switch over to a competing product line simply as a result of an advertising jingle, no matter how catchy it might be.

If mass advertising is no longer the paradigm form of communication between capitalist enterprise and consumers, what replaces it? The answer given by defenders of the lean-production model should be clear from the above. In lean production, enterprises and consumers are connected in a long-term relationship:

[A] trust relationship is restored to large sections of industry. The goal of the ... corporations is to maximize the binding energy between themselves and their customers. This is done by maximizing customers satisfaction and by enlisting the customer into a co-destiny relation.53

In this “co-destiny relation” the consumer invests money in the purchase of a commodity and, perhaps even more important, time in self-education regarding the company’s product line. In return he or she receives up-to-date information regarding products available and their use, a higher level of service, the opportunity to provide feedback that will affect future product development, special discounts, permission to tap into a company’s data base to track orders and shipments, and so on. As a result, the consumer develops a stake in the company’s future.

This last point is extremely important in lean production. When start-up costs are high and product life-spans short, many manufacturers do not see a return on new product lines until the third or fourth generation. As a result the rewards of retaining customers are high; it costs five times more to create new customers than to keep old ones; retaining two percent more customers is equivalent to cutting costs by ten percent.54

With so many resources going into the maintenance of a co-destiny relation between an enterprise and its consumers, claim the ideologues of lean production, mass advertising cannot retain the central role it had in Fordist mass marketing. Also, much of the advertising that does occur will lose its manipulative features, for excessive hype undermines the very long-term trust that creates and maintains “long cycles of satisfaction maintenance”.55 Advertising will supposedly stress instead the credibility of a corporation, the quality and service it provides, the levels of past customer satisfaction, and so on. All of this provides a second argument for consumer sovereignty being instituted in lean production.

Most of the attention on the lean-production model has been directed towards the capital/wage labour relation and the relations among different units of capital. Just as central to the new utopians, however, is the claim that capital is now planned at the service of the consumer in a qualitatively new way. Marxists have always regarded the notion of consumer sovereignty with hostility, considering it a legitimating ideology masking the essential social relations of capitalism. If the claim that lean production truly institutes consumer sovereignty could be redeemed, 53 Davidow and Malone, p. 222. The Director of the Xerox Palo Alto Research Center (PARC) writes, “(O)ur future competitive advantage will depend not just on selling information-technology products to customers. It will depend on coproducing these products with customers — customizing technology and work practices to meet their current and future needs.” Again, “(R)esearch’s ultimate partner in coproduction is the customer. The logical end point of all the activities I have described is for corporate research to move outside the company and work with customers to coproduce the technology and work systems they will need in the future.” John Seely Brown, “Research That Reinvents the Corporation”, Harvard Business Review, Jan.-Feb., 1991, pp. 104, 110.
54 Davidow and Malone, pp. 222, 153.

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the Marxist analysis of capitalism would be profoundly called into question. But this claim cannot be redeemed.

**Criticisms of the Capital/Consumer Relation in Lean Production**

The argument that the gulf between the consumer and the commodity has been eliminated in lean production refers to situations where social agents have sufficient income to make consumer purchases. But what of situations where that is not the case? The argument obviously loses its force in such circumstances, where the gulf between the social agent and the commodity remains infinitely wide.56

In lean-production systems there is a significant amount of involuntary unemployment. There are also growing numbers of part-time and temporary workers, especially among subcontractors. Involuntary unemployment, part-time work, and temporary work all significantly squeeze the purchasing power of these (potential) consumers, creating an unbridgeable gulf between them and more and more consumable commodities. Lean production also involves a global fragmentation of the work force, as capital successfully searches for ways to combine high levels of productivity with low wages. The resulting pressure on real wages ensures that the gulf between consumers and consumable commodities will be exacerbated in the lean-production system for many of those fortunate enough to retain full-time employment.

For Marx, "socially necessary labour" means "socially necessary given the commodity form, the money form, and the capital form". It does not mean "necessary for the satisfaction of the most pressing social needs". Under these social forms only those needs that have sufficient purchasing power behind them are relevant. What counts is not "demand" per se, but effective demand. This means that all those who lack sufficient effective demand to purchase what is necessary to obtain the minimal socially acceptable standard of living in the given historical and cultural context are left out of account. It follows at once that their relationship to the social forms is an antagonistic one. This is all part of the ABC's of an understanding of capitalism, but writers in the business press forget about such matters when they sit down to extol the capital/consumer relation in lean production.

Suppose we restrict our attention to those able to muster adequate purchasing power to participate effectively in consumer markets. It might seem that for them, at least, the measures to incorporate consumer desires into design and production do remove the gulf between consumers and commodities. The situation, however, is more complex than this. Even when the consumer can purchase a commodity, and even when that commodity has been designed with the individual consumer (or relatively narrow range of consumers) in mind, there can still be a gulf between the consumer and the product. This gap arises whenever purchases made by economic agents lead to results that go against collective interests with which those consumers identify.

This will tend to occur in capitalism because of the limits of the price mechanism as a means for the transmission of information. Prices are capable of conveying information regarding both the effective demand for a commodity and the internal costs of production, that is, the costs the producing firm must itself pay. Prices are not an efficient manner of transmitting other forms of information, especially the external costs of production imposed on the working class and its communities. Examples of these external costs include the physical and psychological stress inflicted on the work force, environmental damages, and so on.

56 There is no good reason to define as consumers only those who are able to meet their needs through consumer purchases, just as there are no good reasons for excluding those who seek but cannot find paid employment from the working class. A system of generalized commodity exchange forces all those within it to participate in consumer markets. The fact that for some this participation is precarious and inadequate does not mean that they ought to be left out of account when the social role of consumer is being examined.
Let us suppose that a given set of consumers does not wish to inflict avoidable harm on either the work force or the environment. The prices of consumer goods do not reflect these practices. The information on these matters that is available to consumers outside of the price mechanism is often unreliable and conflicting, demanding a considerable amount of time to sort out. And so consumers who wish to limit environmental degradation and to promote safe work conditions may find themselves making purchases that further precisely the situations they wish to avoid. In these sorts of cases it makes sense to say that the consumer is alienated from the commodity he or she has purchased, even if that commodity has been customized with him or her in mind.

Another point is relevant here as well. In lean production, as in all variants of capitalism, there is a systematic neglect of consumer wants and needs that do not fit the commodity form. Capitalism possesses an astonishing ability to incorporate diverse forms of experience into the commodification process. Sexuality and its signifiers are offered for sale everywhere, evoking desires and anxieties in equal measure. Art works become objects of commercial speculation. Political activism is replaced by the purchase of T-Shirts or compact disks that proclaim support for some cause or other. Commodity exchange can even assimilate rebellions against commodity society; surrealism becomes just another technique employed to get the consumer's attention, and punk sets off a new round of clothing fashions.

Something in human life has been impoverished when sexuality, aesthetic experience, political activism, and rebellion are reduced to the commodity form. This impoverishment is not removed simply because in lean production many commodities are customized to specifications defined by individual consumers or small groups of consumers. Immersion in those commodities continues to cut the consumer off from the possibilities opened up by non-commodified experiences.

We have still to consider the claim that the manipulations of mass advertising are now giving way to trust and mutual communication between capital and consumers. A first line of response is rather obvious: where is the data that consumers are less exposed to advertising? Ad expenditures in the U.S. jumped from $61 billion in 1981 to over $130 billion today. People in the U.S. today are exposed to 3,000 marketing messages a day. By the time of high school graduation the average 18-year old in the U.S. has had 350,000 commercials inflicted upon him or her. Ever-new technologies for distributing advertising and testing its effectiveness are being devised, including color printers installed in homes that periodically produce coupons and color brochures. TV sets in airports and supermarkets that play ads continuously, and heat sensors installed in home television sets that feel when a viewer from a particular demographic category is watching the ad.

But even if we were to assume contrary to fact that the psychic manipulations of advertising would lessen with lean production, the logic of the capital form would continue to distort the identity of consumers. The capital form includes a drive to lower what we may term "socially necessary consumption time". For the circuit of capital accumulation to proceed smoothly, it is not enough that commodities be produced and purchased within a given time period; the objects purchased must be consumed within a given period as well, so that the consumer can return to the market ready to make the next purchase. This is why advertising in lean production is not about selling; rather, it is about giving the illusion of choice and the illusion of control. It is about manipulating the consumer's mind and making her or him oblivious to the real costs of the commodities that are being sold. The result is a society that is both more and less connected to itself, a society that is both more and less aware of its own contradictions and conflicts. In this sense, lean production is a form of capital accumulation that is as complex as it is contradictory, as it is both necessary and impossible to sustain.
round of purchases. Everything else being equal, the shorter the socially necessary consumption time, the quicker capital passes through its circuit, and so the more capital can be accumulated in a given period. In lean production, socially necessary consumption time is reduced by shorter product cycles, more frequent design changes, and increasing emphasis on fashion.62 This intensification of consumption distorts human subjectivity every bit as much as the manipulations of mass advertising. The pressure to define yourself in terms of consumption activity (“you are what you buy”) is greatly exacerbated.

Also, commodities always promise a fulfillment they cannot provide; if they did, there would be less reason to return to the market for other commodity purchases. As the pace of consumption increases, lean production tends to leave the consumer in a state of perpetually unsatisfied desire.

Finally, an analogy can be drawn between capital/wage labour and the capital/consumer relations. Wage labour is formally subsumed under capital when the wage contract, while moving workers into factories and subjecting them to supervision, leaves the organization of the labour process the same as it was in independent artisan workshops. Real subsumption occurs when capital transforms the labour process to further its interests. The real subsumption of labour is rather obvious when management dictates decrees unilaterally from above. As we have seen, in lean production things are more subtle. Management mobilizes the intelligence and creativity of the work force, trying to objectify the insights of workers in a form that can then be appropriated. Once appropriated, these insights can then be used against the interests of labour, for instance, when workers’ suggestions lead to speed-ups and higher stress levels. Here too there is a real subsumption of labour under capital.

Consumers can be said to be formally subsumed under capital when they are tied to capital by contractual arrangements of purchase alone. A process of the real subsumption is set off whenever manufacturers and distributors attempt to actively mould consumer demand. The real subsumption of consumers is rather obvious where the manipulations of mass advertising are concerned. But more subtle forms of real subsumption are also possible in the realm of consumption.

In lean production, firms attempt to mobilize consumers’ self-definition of their needs. The use of information technology to track individual consumer’s responses instantaneously and continuously can be seen as the objectification of the consumer’s subjectivity and self-understanding. Once this information has been objectified, it can then be appropriated by manufacturers and distributors. Information technologies allow enterprises to know the name and address of each person who buys a product, and to maintain files on their purchase history.63 With this data they can then target individual messages for each customer (“micromarketing”).64 Once this information has been appropriated in this manner, it can then be used against the consumers who were its source. Messages addressed to an anonymous mass are less effective than those directed to you personally; the more one knows about you, the more open to manipulation you are. This is surely a form of the real subsumption of the consumer under capital.

Is there an antagonism at the heart of the capital/consumer relation? Defenders of lean production say no. They acknowledge that in the Fordist model of mass consumption there is a gulf between the consumer

62 This is a central theme of David Harvey’s analysis of lean production, which he terms “flexible accumulation”. See The Condition of Postmodernity, Oxford: Blackwell, 1989.
64 Martin Mayer, “Scanning the Future”, Forbes, Oct. 15, 1990, pp. 114-117. When the information highway is in place and more and more consumers’ lives become mediated by digital transmissions, amassing these sorts of data bases will become immensely easier.
and the mass-produced commodity, and that mass advertising involves the manipulation and objectification of consumers. They claim that technical advances and the organizational structures of lean production reverse both points. In fact the gulf between the consumer and the object of consumption remains in lean production. Essential social needs continue to go unmet due to lack of purchasing power; individual consumers continue to be led by the price mechanism to make choices that go against their shared interests; social needs that do not fit the commodity form continue to go unheeded; the capital form continues to undercut certain types of identity formation while encouraging others; and new forms of the “real subsumption” of consumer activity under the capital form are developed.

When we add to this the persistence of mass advertising, the arguments of the new utopians suggesting that all systemic antagonisms in the capital/consumer relation are removed in lean production are simply not convincing. Talk of consumer sovereignty mystifies an economic system whose alpha and omega remain capital accumulation.
III. Relations among Units of Capital in Lean Production

Besides the capital/labour relation and the capital/consumer relation, there is a third fundamental social relation in capitalism, connecting the many different units of capital with one another. Unsurprisingly, apologists for lean production (quite literally) acknowledge that this relationship was antagonistic in Fordism. Then they claim that this form of social antagonism is dramatically lessened in lean production.

There is one crucial twist here that we haven't seen before. While the new utopians proclaim that all structural factors leading to capital/wage labour and capital/consumer antagonisms are overcome in lean production, not even the most utopian of writers in the business press can deny that the antagonisms of market competition continue to define relations among units of capital. Crucial features of inter-capitalist competition are downplayed, however, allowing them to once again suggest that a utopia is around the corner.

Inter-capital relations take a great number of different forms. The previous section briefly described ties between manufacturers and firms that distribute commodities to final consumers. In this section I shall concentrate here on the other relation that has received extensive scrutiny in the literature on lean production, the relation between large assembly firms and their suppliers.65

Inter-Capital Relations in Fordism

In Fordism, relations between assemblers and suppliers were generally fragile and antagonistic. The larger assembly firms attempted to play various suppliers off against each other in price competition. If new suppliers came along and offered lower prices, assembly firms would often drop their previous suppliers. This lack of loyalty went both ways; suppliers would attempt to use expertise developed in relations with one assembler to win contracts with the assembler's competitors. There was, in brief, generalized distrust.

This arrangement had a number of shortcomings from the standpoint of capital. Price pressures on suppliers forced them to cut corners, undermining quality. Also, suppliers who realized how expendable they were could hardly be counted upon to devote themselves religiously to delivery schedules when emergencies arose. This forced assemblers to stockpile high levels of parts, leading to high inventory costs.

65 Other inter-capital relations include relations among relatively equal firms in different sectors (such as the Japanese keiretsu uniting enterprises engaged in banking, commerce, and manufacturing); associations of small businesses; and strategic alliances such as joint ventures and project consortia. For a full description of the various inter-capital relations in lean production see Michael Gerlach, Alliance Capitalism: The Social Organization of Japanese Business, Berkeley: University of California Press, 1992, pp. 67-71.
The antagonisms between supplier and assembler also affected the innovation process. Subcontractors were generally too small to engage in significant research and development themselves. From the assembler's perspective, it made no sense to share technical innovations with suppliers, since in the medium term these suppliers might well be working for competitors. And even if assemblers were to offer to share innovations, suppliers fiercely resisted any and all attempts by assemblers to interfere with their autonomy. Conversely, on those occasions when suppliers did discover technical improvements, they were no more likely to share them with assemblers, since the latter could turn around and pass them on to competing supplier firms.

There were cases, of course, where technical demands mandated that suppliers and assemblers work together, for instance when a new product and its parts were being designed. Here too, however, the short-term relation between suppliers and assemblers prevented them from cooperating on medium-to-long-term research projects. Suppliers would typically be given the information they required to design a part only after the engineers of the assembly firm had completed their work. With the design engineers of an assembly firm and the design engineers of suppliers working separately, the time required to bring innovations to market stretched out.

In the long wave of expansion after World War II growth levels were high enough to mask many of these problems. But as an extended period of economic decline began in the early '70s, capital searched for ways to restructure relations among different units of production, just as it searched for ways to restructure the capital/labour and capital/consumer relations.

**Inter-capital Relations in Lean Production**

In the lean-production system, inter-capital relations are transformed along lines that Kenney and Florida term "quasi-integration". 66 Extensive networks uniting different units of capital are constructed. These networks have technical, organizational, and informal dimensions.

Technically, suppliers and assemblers are better able to coordinate their activities when they use identical capital equipment, along with identical software programs and tools. Electronic data interchange is another technical precondition for close relations; it affects invoicing, data control, engineering data exchange, warehouse and transport planning, delivery notification and acknowledgement, payments, electronic funds transfer, and contract progress between firms.67 Quality Function Deployment software warrants special mention, as it allows assemblers to monitor whether their suppliers' output fulfills the parameters they have set.68

Networks of assemblers and suppliers can be bound together organizationally through equity and debt holdings, dispatched directors, equipment leases, and trade associations. Such organizational ties are obvious in the case of spin-offs. Here a company grants one of its units independence in order to develop new products, while retaining the above sorts of ties with the new enterprise. These ties are also obvious in joint ventures, where two or more companies having "complementary competencies" contribute staff and funding to starting up a new firm. The above methods can also be used to tie companies together that do not have any organizational history in common, making the boundaries between firms much more "fluid" than they were under Fordism.

The informal glue of a network of lean-production firms is the trust that arises from extensive cooperation:

*It has become obvious to many manufacturers that their ability to become world class...*

66 Kenney and Florida, p. 78.
competitors is based to a great degree on their ability to establish high levels of trust and cooperation with suppliers.\textsuperscript{69}

This dimension allows the ideologues of lean production to proclaim a radical rupture from past capitalist practices. With lean production we are supposedly on the very threshold of a capitalist utopia; harmony and cooperation will reign among units of capital, as well as between labour and capital and between capital and consumers. This harmony and cooperation is manifested above all through the free flow of information through inter-capital networks:

\textit{The road to world-class supply chain management meanders through a series of cultural changes — to a new plateau of trust. To achieve true partnership, customers and suppliers must share information — on new product designs, internal business plans, and long-term strategy — that once would have been closely guarded.}\textsuperscript{70}

Again,

\textit{The nature of the new business relationship will result in stronger and more enduring ties based on a mutual destiny, one shared by groups of both suppliers and customers . . . [There will be] unprecedented levels of trust . . . between the company and its suppliers.}\textsuperscript{71}

Tight production and distribution linkages ("functional integration\textsuperscript{72}") is a direct result of this trust. In the lean-production model, a core assembly firm may have up to ten tiers of suppliers. The core company (final assembler) structures linkages and coordinates flows among its first-tier suppliers, whose plants are located nearby and who are often partially owned by the final assembler. Each subsequent tier then coordinates the tier directly beneath it.

The advocates of lean production stress how networks bound together technically, organizationally, and through trust are able to enjoy many of the benefits of the vertical integration characteristic of large-scale Fordist firms. Each step in the entire production process can be closely monitored. The quality of components shipped by subcontractors can be easily checked, and many potential quality problems can be corrected before they occur. Product development planning can anticipate a number of generations of products.

These networks also allow firms to avoid some of the costs of vertical integration. Firms can concentrate on their "core competencies", rather than enter into areas where managerial, technical, and labour skills are lacking. Excessive bureaucratization is avoided, which both avoids unproductive expenditures and shortens the time it takes for firms to make decisions. Spin-offs and joint ventures provide career paths for employees whose ambitions might be thwarted in the parent companies. Another point emphasized in the business press is that these arrangements allow the parent company to benefit from the flexibility, internal cohesion, and entrepreneurial focus of smaller companies.\textsuperscript{73}

These networks of trust are also claimed to push the innovation process past the barriers reached in Fordism. They allow financial risks associated with the innovation process to be spread out, encouraging a more extensive search for new products and processes. Suppliers organizationally bound to a single assembler (or small number of assemblers) develop "relation-specific skills" that enhance their basic technological capability.\textsuperscript{74} When core companies provide bank loans or trade credits, or lend or sell production equipment to their suppliers at low prices, this helps subcontractors undertake technological upgrades.\textsuperscript{75} Cooperation among suppliers and assemblers may also involve a sharing of personnel, which allows


\textsuperscript{71} Davidow and Malone, pp. 142, 183.

\textsuperscript{72} Kenney and Florida, p. 215.

\textsuperscript{73} Gerlach, p. 202.


\textsuperscript{75} Gerlach, p. 218.
innovations to diffuse at a more rapid rate. Especially important, once again, is the flow of information within networks: information regarding product design plans, advances in materials, machinery, work-place organization, and so on. The multidimensional flow of information from supplier to assembler and back is a precondition for concurrent engineering, and joint participation in product development allows a significant reduction in both the time it takes to diffuse innovations and the time it takes to ship new products to market.

The Limits of Trust in Lean Production Networks

The reader will no doubt have already noticed one obvious flaw in the above summary of the discussion of inter-capital networks in the business press: the complete disregard of the class dynamic involved in the formation of these networks. When a core firm "downsizes" and shifts some stage of the production and distribution process to a smaller firm, more is going on than simply a decision to concentrate on "core competencies". Typically, jobs that are unionized with relatively high pay and benefits are replaced by jobs in non-unionized plants where pay is low and benefits small or non-existent. For those who rhapsodize about the wonders of lean-production networks to ignore this dynamic is intellectually dishonest.

There are many other reasons why proclamations of a utopia based on trust and cooperation among units of capital should be treated with extreme skepticism. Three will be considered here.

1. It is true that in lean-production networks suppliers benefit from not having to deal with sudden emergency orders or unexpected cancellations. They also have access to proprietary information regarding, for instance, an assembler's product-development plans. But this does not imply that all firms are equal in these networks. As Kumazawa and Yamada note, the 'no-buffer principle' or the 'just-in-time system', for example, would not work efficiently without the parent firm's power also to control the production of parts-suppliers, and the parts-delivery service of forwarding firms. Giant firms distinctly benefit from the large-scale industrial gradation of firms.

This asymmetry of economic power stems from the dependence of subcontractors on core assembly firms. To take a typical example, Honda prefers suppliers who are dependent on it for 33 to 100 percent of their total volume. This power relation is thoroughly mystified by utopian talk of harmony and trust.

Core assembly firms can also coerce the subcontractors dependent upon them to share proprietary data and technology, to set aside board seats for the main assembler, to buy their machinery from a business owned by that assembler, to let the assembler make inspections regularly, to grant the assembler permission to tap into their computers and to pick the brains of their workforce. These are all one-way relationships; suppliers do not have the power to force assemblers to do any of these things.

Large core firms are generally able to keep the costs they pay to subcontractors for inputs from rising at the same rate as the prices they receive for their own outputs. They retain the most significant "value-added" parts of the production process for

77 Xerox was able to cut product-development time in half after moving to concurrent engineering (Davidow and Malone, p. 140). To this we can add that concurrent design also affects manufacture and production costs: designers upstream become more aware of the downstream consequences of their decisions. In the networks set up by Japanese transplants firms in the U.S., 50 percent of first-tier suppliers participate closely in new product designs (Kenney and Florida, p. 142).
79 Gerlach, pp. 132, 135.
themselves, delegating the less profitable activities to their suppliers. They are also able to shift the costs of holding inventory onto their suppliers. In periods of economic downturn core firms undertake these strategies with special vengeance, as they attempt to displace the burden of the downturn on their subcontractors as much as possible.

All of this implies a paradox: the decentralization of production and distribution in lean production is conjoined with an increase of centralized economic power. In other words, the scope of strategic decision-making by core firms increases, even while they “downsize” and subcontract certain functions to smaller firms. The decisions they make affect these subcontracting firms, but these latter firms do not participate in the making of those decisions:

(1) the vertical groups that comprise upstream supplier firms and downstream distributors introduce at the inter-firm level some of the characteristics one associates with standard hierarchical organization (notably a degree of centralization of product-related decision-making, which is managed by the parent firm). 80

We can conclude that “cooperation” and “the free flow of information” are at best partial and provisional within networks. A fundamental antagonism among units of capital remains even here, one that is especially likely to be manifest when a crisis appears.

Another aspect of the class dynamic of intra-network relations among units of capital must be mentioned. We have just seen that smaller firms within networks are subject to considerable financial pressure. It is inevitable that smaller subcontractors will seek to compensate for their precarious position within the networks by superexploiting their own labour force. Many of the corporations most lauded in the business and popular press for their “humane” labour relations directly benefit from the superexploitation of those employed by their suppliers.

2. According to the defenders of lean production, economic networks replace certain forms of market transactions with more informal relations of “reciprocal obligation”. But even if we were to grant what we have just seen to be false — that is, that informal reciprocity removes antagonisms within networks of capital — this hardly removes impersonal market forces. In fact, an extension of “reciprocal obligation” within networks is completely consistent with a heightening of distrust and competitiveness among different networks, so that the net extent of inter-capitalist antagonisms increases in lean production.

Of course it is difficult to measure such things. Wherever the law of value holds, the competitive pressures to lower socially necessary labour time will be found to a high degree. But there are a number of respects in which competitive battles among networks of capital can be said to be increasing in intensity:

- In the epoch of lean production fewer firms enjoy relatively stable control of their national markets than was the case in Fordism. Given intensified global competitiveness, why should the (limited and provisional) pockets of increased cooperation among units of capital be taken as a defining characteristic of lean production? Is not this view, propounded by the new utopians, a systematic misdiagnosis of contemporary developments?
- The pace of technical change increases in lean production, and there is a systematic connection between enhanced innovation and increased inter-capital antagonism. Given the rules of the capitalist game, rules that continue to operate in lean production, innovation means that certain past investments will be devalued, that is, will suffer “moral obsolescence” prior to being fully amortized. The ever-present danger that this fate will befall their own investments lead the owners and controllers of capital to attempt to shift the costs of devaluation elsewhere. In the context of lean production, this conflict

80 Gerlach, p. xviii.
moves to a higher level to a certain extent, as networks of enterprises attempt to shift the costs of devaluation onto other networks. Once again, increased cooperation within networks is fully compatible with higher levels of antagonism within inter-capital relations as a whole.

- A more rapid rate of innovation also means that there is less assurance that success in mastering one generation of technology can be maintained in the near future. As there is less and less margin for error, the sense of insecurity that individual units of capital have always felt regarding their ability to continue the circuit of capital accumulation is heightened. This heightened insecurity is manifested in heightened distrust of (actual and potential) competing units of capital, a distrust that can be manifested in ways ranging from industrial espionage (one of the most booming sectors of the contemporary economy) to hostile take-overs.

- Whatever exchange of proprietary information may occur within networks of lean production firms hardly justifies the assertion that lean production brings about a free flow of information. The rise of lean production has been accompanied by an extension of intellectual property "rights", which are explicitly designed to hamper the diffusion of information. The extension of intellectual property rights also hampers innovation, wastes social resources in legal disputes, disproportionately aids the largest firms that are best positioned to wage extensive court battles, and maintains unequal development on the international plane.81 None of this is compatible with the idea that harmony and trust reigns among units of capital.

Defenders of lean production would no doubt interrupt at this point, insisting that they hardly need to be reminded that lean production involves market competition. After all, they have themselves stressed that assemblers and suppliers must work more closely together precisely in order to gain competitive advantages (recall the quote from Spekman on p. 57 above). And they also stress how competitive pressures lead lean-production enterprises to seek non-antagonistic labour relations and new ways of integrating consumers into the design process.82

The advocates of lean production do acknowledge all this, and this is precisely the problem. In the writings regarding lean production in the business press, there is a fundamental ambiguity regarding the question of ends and means. Much of the time these writings proclaim that lean production further harmony and trust among economic agents. This suggests that the values of harmony and trust define the ultimate goals of economic activity, and that the superiority of lean production lies in the fact that it attains these ends better than alternative forms of economic organization. In other contexts, however, the threat of competition from other units of capital is used to justify the transition to lean-production arrangements. This implies that success in capitalist competition is the ultimate end of economic activity in lean production.

The latter perspective, of course, is the more accurate one. It is the stick, not the carrot, that reigns supreme in lean production. The ideologues of lean production do not ignore this perspective, but they do not acknowledge how thoroughly it undercuts the former outlook, to which they also appeal. The measures praised by the new utopians because of the "trust" and "harmony" they introduce are merely tactics in the never-ceasing competitive battle to accumulate capital. Since "trust" and "harmony" are mere means and not ends in

81 More affluent societies, with a greater base of scientists and technicians and a more extensive scientific-technical infrastructure, can maintain their relative advantage more easily the more intellectual property "rights" are extended and enforced. The U.S. has made the extension and enforcement of intellectual property "rights" a foreign-policy priority.

82 For a defense of lean production that emphasizes how labor/management harmony, consumer input, and networks of firms are all weapons in global competition, see Robert Reich's The Wealth of Nations.
themselves, they will always have a limited and precarious existence in lean production. All ways of furthering these social values that do not further capital accumulation will be systematically ignored or actively suppressed. This brings us to a final comment on the role of networks in lean production.

3. As we have seen, defenders of lean production stress how new levels of information exchange are established within the new inter-capital networks. The technologies arising out of the microelectronics revolution are a crucial precondition for this information flow.

The microelectronics revolution, like almost all other technological breakthroughs of the twentieth century, was funded with public monies. But while the costs of initially developing this technology were socialized, the benefits of subsequent development and implementation have not been. As a result, the advantages of the technology have been predominantly enjoyed by private companies with the resources to set up expensive private communications systems. As a result, the information that flows in lean-production networks is limited to information that furthers capital accumulation, despite the fact that many, many, other forms of information are directly relevant to this production and distribution system.

Where in the lean-production system are the networks devoted to the transmission of information regarding workers’ health and safety? Where are the networks that track the hiring and promotion practices of the various divisions of a firm and its subcontractors, sharing information on discrimination on the basis of gender, race, ethnic identity or sexual preference? What lean-production network has opened its computers to local environmental groups attempting to monitor pollution resulting from the activities of firms within the network? Where are the networks connecting homeworkers who have separately subcontracted certain duties from the same firm? What networks unite workers spread over the globe, all of whom are employed by subcontractors the same company?

None of these things are mentioned by those who laud the lean-production system. The networks exhorted by the new utopians are networks of capital, not networks uniting the workers’ movement with the environmental movement, the feminist movement, the gay and lesbian liberation movement, the anti-racist movement, and so on. Lean-production networks have no room for these sorts of networks, because lean-production networks foster the private control of decisions affecting economic life. Lean-production networks, in brief, are structured to restrict public discourse, not expand it. Their aim is to protect the owners and controllers of capital from accountability for their decisions:

Private businessmen...are involved in discreet networking rather than public industrial policies with their risks of democracy, publicity and raised expectations among the workforce. Strict albeit unwritten codes of secrecy ad limited entry

83 "Who would pay money for a computer that had 18,000 vacuum tubes and failed once a day on average? Only the military. Defense paid for development of the ENIAC and provided a market for many of the computers developed in the 1940’s and early 1950’s. It wasn’t until the late 1950’s that a significant commercial market for these machines developed. Likewise, the military and NASA snatched up the first crude integrated circuits at $100 a pop in the early 1960’s, when no one else would. DARPA paid for the world’s first switching network in the 1970’s, advancing a technology that has become the staple of datacommunications. This decade’s spin-off examples include expert systems, which derived from rule-base programming work sponsored by DARPA in the late 1970’s. And you can thank DARPA for Unix-based workstations, as well..."
are the characteristics of networking of the ruling economic elite.\textsuperscript{84} It should also be stressed that the extension of intellectual property "rights" in lean production makes it harder for members of mass social movements to gain access to relevant information regarding the activities of the firms within a lean-production network. It is possible for the establishment of networks of lean-production firms to be combined with a net decrease in the amount of significant information regarding production and distribution available in the society as a whole.\textsuperscript{85}

Once again we have a confusion of ends and means, which is always a sign that ideologies are at work. In the business press inter-capital networks in the lean-production system are applauded for furthering the flow of information, as if that were an ultimate goal of the system. But the very arguments that are used to legitimate the flow of information within networks of capital can also be used to critique the limits of access to relevant information that remain after those networks are established. The fact that this criticism is not made in the business press shows that for the advocates of lean production the true goal of the system remains capital accumulation, despite the use of rhetoric that suggests otherwise. Social innovations that further the end of information flow are assimilated with great fanfare when they are compatible with capital accumulation and ignored or suppressed otherwise.

The claim that lean production is about to inaugurate a utopia where trust, cooperation, and the sharing of information within networks replaces the previous antagonism among units of capital is as hollow as analogous claims regarding the capital/labour relation and the capital/consumer relation. The Marxist thesis that social antagonisms are fundamental in capitalism has not been refuted with the transition to lean production. It has been corroborated once again.

Where does this leave us?

\textsuperscript{84} Hilary Wainwright, Arguments for a New Left, Oxford: Blackwell, 1994, p. 169.

\textsuperscript{85} This point is often overlooked by members of the technocracy, who naively believe that the extension of information technologies automatically leads to an extension of information flow in the society as a whole. The consequences of a technology always depend on the social relations within which that technology is used.
IV. Socialism: An Alternative to Lean Production?

At this point one move is still open to the defenders of lean production. They could argue that even if some of the stronger claims for lean production cannot be fully redeemed, this system remains the best of the feasible alternatives. After all, no one wants to go back to Fordism. And have not events in Eastern Europe and elsewhere shown that the socialist alternative has failed?

In order to deal with this line of thought we must take a somewhat roundabout path. In this final section of the Notebook I shall sketch briefly some of the factors underlying the collapse of bureaucratically-planned economies. I shall then list some of the features of a socialist society based on participatory democracy that would fulfill the promises of lean production. Finally, arguments will be presented that show that grassroots, socialist democracy can avoid the shortcomings of bureaucratic planning.

Structural Contradictions of Bureaucratic Planning

A great variety of economic, political, and cultural factors played significant roles in the collapse of the Eastern European regimes. In the context of the present work the most relevant issues concern technological change and the socio-economic framework within which that change occurred.

In bureaucratically-planned economies, general plans for each economic sector are formulated by central ministers and then coordinated by the leading bodies of the ruling party. These plans are based upon information relayed by lower-level officials to those above. The plans are then transmitted through various intermediate strata to the managers of local enterprises. Successful passage to higher positions in the bureaucracy depends upon successful fulfillment of the quotas dictated from above. The outputs are then distributed either to other enterprises or to final consumers. These consumers, like those working in enterprises, have no active role in the formulation of the plan.86

This arrangement has proven compatible with profound technological advances during periods of initial industrialization.87 It has also proven compatible with continued advances in certain areas of basic scientific-technical knowledge, especially in areas of special interest to the central planners (such as arms and space).88 Bureaucratically-planned economies failed to make the shift from extensive to intensive technologies, however. They also experienced serious difficulties in moving...
from basic research to concrete application, and in non-priority areas. These shortcomings cannot be blamed on contingent occurrences. There are a series of structural problems regarding technological change that can be derived from the above model, sketchy as it is, some of which will now be mentioned.

Bureaucracies operate according to routine, and routines function most smoothly when events follow a predictable course. Bureaucratic planning in principle could be efficient if technical innovation were predictable. But the less routine an activity is, the less likely it is to be administered effectively through bureaucratic procedures. Out of all human endeavors technological innovation is among the least predictable, the least subject to organizational routine. Hence it is among the areas where bureaucratic procedures are least likely to be effective.

A process innovation is a new technique for producing an already-existing product. Usually it is introduced in order to make the production of that product less costly. Process innovations generally require a shift in the ratios in which different factors of production are employed, or else the employment of new types of inputs that were not previously used. This demands a revision of the economic plan set by the ruling bureaucracy. If process innovations are introduced continually throughout the economy, the plan is soon in a shambles. Adherence to the plan throughout a given production period thus is equivalent to discouraging process innovation.

3. Economic Disincentives for Technical Change
In the bureaucratic hierarchy managers of firms are rewarded according to their ability to meet or surpass the output requested of them. However, if they regularly surpass the requested output it is quite likely that the amount required of them will be increased in the next plan, making it more difficult to meet or exceed what is requested, which in turn makes it more difficult for managers to claim their reward. Within this social framework it will not be in the interests of managers or workers to introduce new technologies whenever doing so threatens to set off this chain of events.

4. Secrecy and Misinformation
Given the previous point, managers might still introduce new technologies if they felt that they would be able to keep new process innovations secret. However if this tactic is successful only the isolated firm benefits from the innovation; the process of diffusing the innovation throughout the economy breaks down completely.

Besides a tendency toward secrecy in the introduction of new technologies, there is also a general tendency to secrecy regarding the amount of resources actually required to produce a given level of output. If the promotion prospects of lower-level bureaucrats depend upon meeting the output quotas assigned them, they have every incentive to overstate the amount of labour, raw materials, machinery, etc., they require. That way if anything unexpected were to occur ample reserves would be on hand. Local managers also have a clear incentive to underestimate the amount of output they are capable of producing.

When all the incentives for secrecy on the local level are taken into account, we can see that there is a general tendency for plans to be formulated by upper-level officials without accurate information regarding actual production conditions.

5. Neglect of Communication Technology
Communications technology generates a unique set of difficulties within the bureaucratic-command model. Since that model is premised on the rule of a single-party elite, the formation of groups competing for political influence is by definition a threat to that elite. Communications technology allows various groups to be organized outside the control of the state apparatus. It is inevitable
that some of these groups will be (or will be perceived to be) antagonistic to the ruling nomenklatura. From this it follows that the ruling strata will be suspicious of the diffusion of communications technology throughout the society, and will take steps to hamper that diffusion. And, of course, this reinforces a problem mentioned above; without adequate communications technology it will be even harder for the central planners to employ accurate information.

6. Avoidance of Risk

If rewards are allocated to local officials according to their success at fulfilling the assigned quotas, then the rational manager would be wary of introducing risky technologies. If a technology did not make good on its promise and the firm failed to attain the output level specified in the plan, the position and reward of the manager of that firm would be threatened.

Another point reinforces this tendency. If rewards are allocated according to the fulfillment of the plan, then technical innovations may not be rewarded, since by definition they are activities that were not specified by the plan. At the least we may say that the risks faced by those who engaged in innovative activity are not rewarded in a manner that corresponds to those risks.

7. Neglect of Quality

Another feature of the plan is that generally the output requests are formulated exclusively in quantitative terms. It is very difficult for the central planners to evaluate the quality of those products. This implies that technologies that can deliver sufficient output to meet or surpass the quotas are acceptable to firms regardless of quality. They have little incentive to pursue additional investment that may raise the quality of goods and services. And if attempts to improve quality threaten the quantitative output of the firm in any way, then there is an outright disincentive to be concerned with qualitative matters.

If there were no form of socialism that could avoid these problems, the advocates of lean production would have the last word.

**Participatory Democracy**

No claim can be made here to offer a definitive model of what genuine, democratic socialism might look like. But it is possible to present measures that could overcome systematic antagonisms in work relations, in the sphere of consumption, and among economic enterprises, measures that would address the structural shortcomings of lean production. I shall then show that a society constructed according to these principles would avoid the shortcoming that plague command economies.

To overcome systematic antagonisms in work relations it would be necessary to abolish structural coercion, exploitation, and real subsumption of labour. What institutional changes would accomplish this?

For structural coercion to be eliminated, two things would be necessary. First, all members of society would have to be guaranteed access to means of subsistence providing a minimally-acceptable standard of living in the given social context. This could best be accomplished through the direct provision of basic social needs. Second, all adult members of the society would have to have a right to employment, that is, guaranteed access to the means of production. Then and then alone would the agreement by a particular worker to labour for a particular enterprise not be distorted by coercive elements in the underlying social structure. Neither of these features is found in the lean-production model.

Exploitation and real subsumption both have to do with the exercise of economic power: respectively, the power to appropriate and allocate the surplus generated by the firm, and the power to structure the labour process. For all the talk of moving away from

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89 Romania under Ceausescu offered a particularly extreme case of this. According to a Romanian manager the word “computer” was even banned from official publications for a period! Gerry Foley, “After Ceausescu’s Overthrow,” International Viewpoint, No. 177, Jan. 29, 1990, p. 5.

authoritarian work relations in lean production, this power remains with those who own and control capital, not in the work force that is supposedly "empowered".

This is a profoundly undemocratic arrangement. The first principle of democracy is that authority rests on the consent of the governed. Exploitation and alienation in the workplace will only be overcome when this principle is applied to exercises of authority there. This does not mean that everyone gets to decide about everything all the time. It does mean that those who decide how surplus is to be allocated within a firm, and how the labour process is to be structured, must be accountable to those over whom this authority is exercised. The collective body of workers must themselves delegate those who are to make these decisions, and have the power to recall them when occasion demands. However great the differences between Fordism and lean production might be in other respects, they both fail to institutionalize anything approaching this type of democracy. They both fail to overcome the exploitation and alienation that Marx saw as inherent in capitalism.

What sort of social arrangements would have to be in place for consumption to no longer involve institutionalized antagonisms? The direct provision of basic social needs and the guaranteed right to employment are as crucial in this context as they are in overcoming coercion in work relations. Also essential are ways of conveying information to consumers that go beyond the price mechanism. Information technologies make it possible in principle to transmit at little or no cost information regarding the work conditions under which products were produced, the environmental consequences of using these products, the results of long-term studies investigating the safety of these products, and so on. Without guaranteed access to this information, consumers might well make decisions that contribute to results inconsistent with their own considered judgements regarding the social good.

The failure to meet wants that do not take the commodity form is another tendency in capitalism that remains in force in lean production. This failure can be reversed through an extensive and well-funded program of allocating grants to community groups that set out to meet social needs in a non-commodifiable way. This must be coupled with regulations guaranteeing access to the means of distribution. For example, sufficient bandwidth must be set aside on the information highway for the transmission of information and entertainment produced by community groups, and ample funds should be made available to allow those groups to finance their projects.

A fourth problem with consumption under the capital form was the general tendency for other forms of self-identity to give way to a self-definition based on consumption. In socialism, more participatory forms of decision-making will pervade the workplace and the community, providing ample opportunities for active participation in political life. A significant reduction of the working day will allow working men and women to take advantage of these opportunities. Under these social circumstances one's identity will tend to be defined by one's active contributions to social life, rather than by the items one passively consumes. A significant reduction in the working day also allows more time to be spent in direct personal relations with partners, children, and friends. This too will result in the strengthening of other forms of identity besides that connected with consumer activity. This is in clear contrast to life under the capital form, where consumer goods provide illusory compensation for the drudgery and stress of labour.

To overcome systematic antagonism in the realm of consumption, steps must be taken to protect against the real subsumption of consumers that occurs when the objectification of their desires can be used against them. In socialism, consumer groups must have open access to the data bases collected on consuming individuals and households. They must monitor the strategies enterprises develop based on these data bases, and they must ensure that consumers are fully informed of these strategies. They must
ensure that privacy rights are enforced, including the right not to have information about oneself be part of a database without explicit consent.

Finally, there is the issue of networks within economic life. Overcoming the limitations of lean-production networks requires two measures. First, the latest advances in information technologies must be put at the disposal of mass social movements. Second, the activities of all units of production and distribution must be coordinated together in a democratic fashion; there must, in other words, be the democratic planning of investment decisions in the society as a whole. These two proposals fit together, in that organizations representing mass movements must play a crucial role in any truly democratic form of coordinated planning.91

Coordinated planning could be undertaken by regional, national and/or international investment boards. Each board would consist of representatives of the state; of mass organizations representing workers, consumers and environmental groups; of collectives of scientists and technicians, etc. Each would have the duty of formulating a number of competing plans regarding the general allocation of resources for economic development, plans based on different estimations of the scientific-technical potential in the society, the risks associated with developing that potential, and the priority of social needs. These various plans could then be taken back to the base of the mass organizations and subjected to an extensive discussion, making full use of the potential of the contemporary revolution in communications technology. At the conclusion of the discussion period, a society-wide vote could decide which framework would be accepted.

The investment boards would then have the responsibility of institutionalizing the plan that had been agreed to. This would first involve allocating resources to various centers for research and development. These centers, in conjunction with nearby universities and production and distribution workers, would form a “technological milieu”.92 These centers would then proceed through the different stages in the technology pipeline, from the most abstract and basic research to progressively more concrete applications. At the conclusion of this process, the results would be provided to worker-run enterprises for final production and distribution.

For each local center a local investment board could be established, consisting of both local officials and local representatives of the mass organizations. Among the main tasks of these local boards would be 1) to ensure that local citizens and groups had continuous access to scientific and technological expertise so that they could educate themselves regarding new developments (unlike both bureaucratically-planned economies and capitalist market societies, where access to expertise tends to be restricted to elites); 2) to set up a series of science and technology courts, where scientists and technologists with different evaluations of predominantly technical matters relevant to economic development could be cross-examined; 3) to set up a series of public hearings, allowing local citizens and groups to articulate any questions or misgivings they may have regarding economic developments; 4) to modify or stop such developments if objections are serious enough; and 5) to forward appeals of their decisions to regional, national, and international investment boards, with the most controversial decisions ultimately to be left to a society-wide discussion and vote. In this manner local communities could ensure that local communities could ensure that local

92 Under capitalism technological innovation has been most successful where a “technological milieu” combines people with expertise in different facets of the innovation process (e.g. those engaged in basic science, applied engineers, production workers, subcontractors, etc.). (See Michael Storper and Richard Walker, The Capitalist Imperative: Territory, Technology, and Industrial Growth, New York: Basil Blackwell, 1989, Chapter 4.) The same could be true under a different set of social relations. In fact, we could expect such milieus to flourish under socialism, which would give production workers far more opportunity to familiarize themselves with the theoretical principles of science and engineering.
economic development is consistent with the democratic will.

These proposals are designed to ensure that the distrust and excessive competitiveness that beset lean production are overcome. The institutionalization of national and international investment boards would eliminate the madness of a system in which each individual unit of production — or each network — desperately attempts to shift social costs onto its work force, onto other enterprises, onto the community. It would also overcome the limits set by capitalism to cooperation and the flow of information regarding production and distribution.

If, as much of the rhetoric of lean production is designed to suggest, economic systems are to be judged by the extent to which they overcome social antagonisms, democratic planning surely ranks above the lean-production model of capitalism. But how do we know that this provides a feasible alternative to lean production? More specifically, are there reasons to think that democracy in the workplace, in the realm of consumption, and in the planning of economic development can avoid the difficulties that plague bureaucratic central planning?

Seven of these difficulties were mentioned above: Bureaucratic central planning 1) hampers innovation in general; 2) hampers process innovation in particular; 3) involves disincentives for technical change; 4) leads to secrecy and plans being based on misinformation; 5) hampers the development of communication technologies; 6) leads to a fear of the risks connected with technological innovation; and 7) leads to a neglect of quality. Would the democratic socialist alternative to lean production be equally prone to these difficulties?

1. Flexibility

Democratic planning need not involve the specification of rigid plans governing the entire economy. It concerns only the most general pattern of the allocation of the social surplus. The members of society could decide to place greater priority on, say, developing innovations to provide adequate housing rather than luxury condominiums, solar rather than nuclear energy, sustainable rather than chemical agriculture. These decisions do not commit the housing sector, the energy sector, or the agricultural sector to adopt any specific technique. Nor do they demand that one set of techniques alone be employed by these sectors over the course of an entire planning period. These sorts of decisions can be decentralized, i.e. left to local enterprises working in conjunction with local investment boards. Democratic planning can thus avoid the structural tendency towards predictable routine that characterizes bureaucratic command economies.

2. Process Innovation

When new processes are introduced, this typically requires new inputs. In bureaucratically-planned economies if a firm makes such an innovation the central plan is disrupted, with the effect that often suppliers cannot be found to provide the required inputs for the innovating enterprises. Two factors in the democratic planning of investment suggest that this difficulty would not arise. As already noted, planning in this model leaves considerable scope for decentralized decision-making. Also, research on local and regional levels is performed in centers that are part of a "technological milieu". Those engaged in pure research interact both formally and informally with those engaged in primary manufacturing as well as with their suppliers. The local and regional investment boards overseeing the innovation process include representatives of all these groups. This arrangement would allow a change in input mix by a given primary manufacturer to be planned in conjunction with a simultaneous change in the output mix by the relevant suppliers.

3. Incentives

With democratic planning there are fundamental incentives to introduce new techniques. Within the workplace it is plausible

to assert that workers will wish to make their work shorter and easier, everything else being equal. They therefore will tend to elect managers who institute a search for new techniques that can make work shorter and easier, and who introduce such techniques when they are found. On the community level a similar point holds. It is plausible to assume that members of the community wish to have social needs provided for in as efficient a manner as possible, everything else being equal. They can be expected to elect planners who will search for innovations that promise to meet socially-articulated needs in a more adequate fashion, and who will introduce such innovations when they are found. Since these planners are recallable, accountability can be continuously enforced.

On the other hand, there are two considerations that might be said to provide disincentives for technical change under the model sketched above: habits and the burden of oversight. Regarding habits, a work force that has become comfortable with a certain way of doing things may resist attempts to change things, while a community may resist attempts to upset its established patterns of life. Bureaucratic central planning overcomes this problem through direct physical coercion and bribery. Capitalistic markets rely on the structural coercion connected with forced unemployment and disinvestment in communities. There does not appear to be an analogous mechanism at the disposal of democratic socialist planning.

For defenders of socialist democracy this is a pseudo-problem. The minimization of drudgery and the better satisfaction of social needs are social goods. The minimization of personal and social disruptions are also social goods. We cannot define a priori the correct trade-off between these two sets of benefits, and we certainly cannot trust either bureaucrats or the impersonal dictates of capitalist markets to attain the proper balance. The correct trade-off is that which the affected workers and communities would decide for themselves in an uncoerced decision-making process.

Another possible disincentive for technical change stems from the extensive oversight processes defining democratic planning. It might be said that the series of boards, public hearings, science and technology courts, votes, and so on that accompany the democraticizing of economic development provide a powerful disincentive to those considering undertaking an innovation. Would these hurdles not require considerable amounts of time and energy to pass? And would this not result in a structural tendency for innovators to be discouraged from introducing advances that they might otherwise have introduced?

A first point to note in response is that a society of decentralized, democratic planning would most likely have more local centers for small-scale, experimental innovation than the current, multinational-dominated economy. There is every reason to expect that the pace of technical change would not slow down at all.

It should also be recalled that in capitalist market societies technical choices typically must also pass through a series of hurdles. In the United States, the military apparatus often must favorably assess the weapons potential of a proposed technical innovation for it to receive crucial initial funding. When it comes to commercial applications by start-up firms, venture capitalists must favorably assess the short- and long-term profit potential of the innovation. And an innovation generally becomes extensively diffused only if large multinationals either take over completely, purchase equity in, or reach marketing agreements with, small firms at the cutting edge of a new technology. These things only occur after the multinationals have completed extensive strategic deliberations. Somehow technical change continues in market societies despite being subjected to such scrutiny. There is no a priori reason to think that the pace of technical change will be significantly effected just because this scrutiny is made by publicly accountable representatives rather than by military officials and the owners and controllers of capital.
However, even if we accepted for the sake of argument that the pace of technical change might lessen somewhat under democratic planning, this in itself would not be very significant. Any adequate evaluation of the innovation process in different social systems must consider more than the pace of technical change. In different social frameworks the direction of technical change will be different. From the standpoint of the social good a shift in direction can in principle more than compensate for any slackening in the pace of technical change.

6. Risk
Under bureaucratic planning local officials tend to be wary of introducing untested technical innovations. This is because they will be held personally responsible for failing to fulfill quotas imposed upon them by higher-level officials. In contrast, under democratic planning innovations are developed as a result of a collective decision, and responsibility for any subsequent problems will therefore be collectively shared. If a technology does not fulfill its promise a search for scapegoats would be pointless, and all energy would be concentrated on correcting the error. Under these circumstances a person or team suggesting that a given innovation be considered would not face the sort of risks mentioned above.

7. Quality
The problems with quality under bureaucratic planning all stem from a single structural fact: in that model there is no feedback relation between producers and consumers. The heads of production facilities are accountable to intermediate strata in the bureaucratic hierarchy as well as to the central ministries, but they are not accountable to the users of their products. Since higher-level officials are only concerned with whether assigned quotas have been fulfilled, while it is consumers who are concerned with the quality of the produced goods, this institutional framework has a built-in tendency to neglect qualitative matters connected with production technology.

The point to stress here is that it is the lack of feedback between producers and consumers that is the problem, rather than anything inherent in planning per se. Under democratically-coordinated planning there is direct accountability of the planners to consumers. If they regularly develop technologies that lead goods and services to be produced that do not meet the community’s standards of quality, democratic mechanisms grant the community a direct recourse: elect new planners.

The model of socialism sketched above no doubt requires extensive refinement and
revisions. What I am not willing to concede, however, is that history has ended with the alternative between bureaucratic planning and contemporary capitalist market societies. Our responsibility to history demands that we begin to grope towards some third alternative that the world has not yet seen. That alternative is not lean production.

Unfortunately, socialism is not on the immediate agenda. In the meantime, the push to institute lean production will only get stronger. What should the response be? Criticisms of the ideology of lean production such as the present work are no more than a small part of the story. The biggest part remains unknown: the creative tactics and strategies that will be devised by the working class in the course of its struggles. In the meantime, a number of general remarks can be made.

The first point is the most obvious one. If there is no reason to think that the interests of capital and labour are automatically reconciled with lean production, working men and women must be prepared to engage in struggles in defense of their interests. This in turn implies the need to form (or preserve) organizations that can effectively carry out such struggles. In other words, there is a clear need for independent labour organizations controlled by the work force itself. Given the continued existence of capital/wage labour antagonism, the imperative to avoid company unions is as strong as it has ever been.

This brings us to the question of the organizational form to be taken by these unions. When they are forced to deal with unions at all, the managers of lean production firms clearly favor single-union plants. Sayer and Walker comment that this is not in itself necessarily a bad development from a leftist perspective: provided that they do not lead to company unions, single-union plants have at least the potential of overcoming the division in the workforce supported by multiple-union plants. Certainly the familiar organizational forms do not represent a golden age for labour, even if, at their height, labour was stronger than now, for it was a highly selective and ambivalent strength, one which actively reproduced divisions in the workforce, particularly between men and women.

This is convincing, but single-union plants by themselves are not sufficient. If different workplaces have different unions, this can "actively reproduce divisions in the workforce", even when the unions in question are not limited to a single company. Whipsawing might still occur, in which groups of workers in different plants of the same firm are forced to compete against each other. Divisions between workers in 'core' firms from those employed by firms in the 'periphery' may remain, even though the fate of these workers may be closely intertwined. If core firms and periphery firms have different gender, racial, ethnic or nationality make-ups, then single-union plants may be compatible with a perpetuation of these divisions in the workforce. And single-union plants may reinforce the institutionalized division between the employed sector of the working class and the unemployed sector.

The self-organization of labour must be on the same scale as the organization of capital. This means that the basic unit of organization cannot be the firm. As capital is organized into unified networks of firms, so labour organizations must unite workers in assembly firms with those employed by subcontractors and distributors. As capital is organized on a global level, labour organizations must become truly international. As one and the same process of capital accumulation creates both employment and unemployment, both sectors of the working class

94 For an account of the importance of innovations made by the rank and file in the course of the most important event of the twentieth century — innovations that no theorist fully anticipated — see David Mandel's Factory Committees and Workers' Control in Petrograd in 1917, Notebooks for Study and Research No. 21, Amsterdam: International Institute for Research and Education, 1993.

must be united in the same organizations. All of this demands a complete and unequivocal break from agendas of lean-production firms, which "are opposed to forms of alternative worker identification . . . which create a separate sphere of identity for workers and disrupt the alignment between worker and company." 96

The struggle against the shortcomings of the lean-production system also demands the setting up of alternative networks to those that unite lean-production firms, networks that unite those engaged in struggles at the point of production with those engaged in struggles in other social arenas. The work of trade-union committees must be closely integrated with community health-and-safety projects, with coalitions of oppressed groups, with consumer activist organizations engaged in the monitoring and critique of corporate advertising campaigns, with groups concerned with question of local, regional, and global ecology, and so on. All of these struggles concern the working class, and none can be successfully resolved as long as the reign of capital persists.

Finally, networks of information exchange are only an intermediate step. The struggle against lean production ultimately requires a revolutionary movement, committed to internationalist principles, and dedicated to the materialization of the utopian impulses that lean production so cynically abuses.

centralization of capital The process under capitalism whereby accumulation leads to larger and larger units of capital, as smaller firms are absorbed into bigger ones or go bankrupt.

circulation time The time required in capitalism after an investment is made before profits are realized. This includes the time required for purchase and transport of inputs, the time that inputs are sitting unused, the time required for production, the time that products are sitting unshipped, the time required for transporting products, the time that products are sitting unsold, and the time before sales revenue is available for consumption or re-investment. Reducing circulation time is a central objective of lean production.

co-determine relation A marketing goal associated with lean production: the consumer develops a stake in the company’s future. This is achieved when the consumer, in return for spending not only money on a product but also time in self-education about the product line, receives up-to-date information, a higher level of service, the opportunity to provide feedback that will affect future product development, special discounts, permission to tap into a company’s database, and so on.

concentration of capital The increasing scale of production under capitalism, as firms that were previously local or regional expand as they capture national and global markets.

concurrent engineering A feature of lean production: products and their parts are designed simultaneously by teams of engineers from both the assembly company and its suppliers.

constant capital By Marx’s definition, the part of capital invested in production that is used not for labour costs but for inputs that either exist in nature or have been shaped into means of production through earlier labour: land, raw materials, parts, machinery, buildings, vehicles, etc.

effective demand By mainstream economists’ definition, demand for a product is “effective” demand if the people who want the product have money to spend on it. People who are starving may need food, but if they have no money then there is no “effective demand” for food.

exploitation By Marx’s definition, the process by which capitalists make sure that the terms of the wage contract allow them to appropriate an economic surplus created by wage labourers. Whenever a profit is made, exploitation occurs; and whenever the proportion of profits in total revenue rises, exploitation intensifies.

flexible specialization The characterization of post-Fordist production put forward by Piore and Sabel. They claim that mass-production markets are now saturated; that sudden shifts in consumer demand have become more frequent; that “economies of scope” (efficient short runs of diverse products, made possible by new microelectronics technologies) have become more important than economies of scale; and that decentralized worker-run firms are in the best position to take advantage of the new technologies.

Fordism The system of mass production of standardized goods and services characteristic of capitalist industry before the rise of lean production. Under Fordism, the quest for economies of scale and the use of single-purpose machinery led to relatively extended product runs. The labour process was organized around assembly lines in which each worker was assigned a specific task to be performed repeatedly, according to procedures determined by time/motion studies (Taylorism), job classifications and work rules, administered by a large apparatus of supervisors and...
middle managers. The relationship between manufacturer and suppliers under Fordism was typically "hands-off", with manufacturers changing suppliers whenever a new supplier offered lower prices and stockpiling parts on the just-in-case principle. The term "Fordism" is also used to describe the mass-consumption societies that grew up on the basis of Fordist production after World War II.

**functional integration** Tight production and distribution linkages between firms in lean production: a core assembly firm with up to ten tiers of suppliers structures linkages and coordinates flows among its first-tier suppliers (located nearby and often partially owned by the final assembler), and each subsequent tier then coordinates the tier directly beneath it.

**information highway** Also called the "information superhighway": the project for a unified communications network that could be used to transmit every kind of data — text, statistics, videos, music, conversation, etc. — and link up individuals as well as companies and institutions. The Clinton administration has suggested that the information highway, whose creation would require many billions of dollars over many years as well as a series of technological breakthroughs, could play a catalytic role in reinvigorating the world economy.

**intellectual property "rights"** Copyrights and patents, which thanks to pressure particularly from (U.S. corporations by way of) the U.S. government were extended in the 1994 GATT agreement both to more countries and to more areas (ideas, names, words, etc.).

**joint venture** A form of quasi-integration between units of capital, in which two or more companies having "complementary competencies" contribute staff and funding to starting up a new firm, while retaining technical, organizational, and/or informal ties with the new enterprise.

**just-in-case** The Fordist principle according to which raw materials and parts were stockpiled just in case their provision was interrupted; partly-finished goods were amassed at each step of the production process just in case problems arose later in production; reserves of labour were hired just in case there were absences; and finished goods were piled up as inventory just in case sudden orders from distributors came in.

just-in-time A feature of lean production: inventories are kept low, and only replenished when warranted by sales. Information that a completed product is needed is transmitted back to final assembly, requests for the different parts required for final assembly are then transmitted back to where the parts are produced; and requests for raw materials are transmitted back to suppliers. Each step occurs only "as needed", "just in time" for the next stage in the process.

**kaizen** A Japanese word meaning "continuous improvement", kaizen refers to a feature of lean production: any work norm that workers have attained is immediately raised, so that workers are constantly striving to do better. Some workers persist in calling this "speed-up".

**karoshi** A Japanese word meaning "sudden death through overwork".

**machinonfacture** The production system, also referred to by Marx as "big industry", in which, once aspects of the labour process had been transformed into machine-like operations, machines were introduced to perform some of these operations.

**manufacturing** By Marx's definition, the production system in which, after the putting-out system gave way to early factories, artisans were replaced by detail labourers, each assigned a single task to perform repetitively.

**mass customization** Also called "micro-mass consumption". An approach to product design linked to lean production: production occurs on an extensive scale as with the mass production of Fordism, but with much more attention to the unique needs of individual consumers.

**micro-marketing** Marketing techniques linked to lean production, by which firms try to mobilize consumers' self-definition of their needs. The use of information technology enables firms to know individual customers' names, addresses and purchase histories; track their responses instantaneously and continuously; and target individual messages at them.

**nomenklatura** A Russian word referring to the list of higher- and middle-level positions in Soviet society and the Communist Party members who were
assigned to them. By extension, the privileged elite in any of the bureaucratic post-revolutionary societies.

post-industrialism A perspective according to which the centrality of manufacturing in Fordism is giving way to a period in which the service sector predominates.

process innovation A new technique for producing an existing product, usually introduced in order to cut costs. It generally requires either a shift in the ratios in which different factors of production are employed or the use of new types of inputs.

putting-out system The first capitalist or proto-capitalist production system: artisans, under contract to merchant capitalists, used their traditional technologies in their own households or independent workshops.

quasi-integration The pattern of inter-capital relations characteristic of lean production, joining different units of capital in extensive networks with technical, organizational, and informal dimensions. Electronic data interchange, along with identical capital equipment, software programs, and tooling, enables suppliers and assemblers to coordinate invoicing, data control, engineering-data exchange, warehouse and transport planning, delivery notification and acknowledgement, payments, electronic funds transfer, and contract progress between firms. Networks of assemblers and suppliers can be bound together organizationally through equity and debt holdings, dispatched directors, equipment leases, and trade associations.

real subsumption of labour The transformation of the labour process by capitalists in order to increase the amount of surplus that they appropriate. As soon as artisans are employed by capitalists, their labour is "formally subsumed" by capital; only after capitalists manage to control employees' work in order to maximize their exploitation is labour "really subsumed".

spin-off A form of quasi-integration between units of capital, in which a company grants one of its units independence in order to develop new products, while retaining technical, organizational, and/or informal ties with the new enterprise.

structural coercion The force of circumstances by which people without access to the means of production are forced by their situation to sell their labour-power to the capitalists who own the means of production. In other words, even though no person, institution or law "forces" working people to work, in fact we are forced to work in order to survive.

subsumption See real subsumption of labour.

technological milieu The type of setting that has been most conducive to technological innovation under capitalism, combining people with expertise in different facets of the innovation process (e.g., those engaged in basic science, applied engineers, production workers, subcontractors, etc.). This type of milieu is most visible in regions such as Silicon Valley in the U.S., where a number of high-tech firms co-exist in a region near one or more major research universities.

Taylorism An aspect of Fordism, named after Frederick Taylor, the founder of scientific management: the correct way to perform a task on the assembly line was determined by time/motion studies undertaken by industrial engineers.
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Tony Smith is professor of philosophy at Iowa State University and advisory editor of the magazine Against the Current. His books include The Logic of Marx’s ‘Capital’.