

Chapter Fifteen

The Social Organization of Production: Cooperatives and Peer Production

Introduction

Privilege in its broadest sense, as we discussed it in Chapter Eleven, is at the root of all the organizational pathologies we saw in the first three parts of this book. At the social level, privilege divorces cost from benefit and leads to the systemic crises we examined in Part Two. Internally, privilege builds a fundamental conflict of interest into an organization. It divorces effort from reward, responsibility from authority, and knowledge from power. The result is all the agency and knowledge problems of the large, hierarchical organization that we saw in Part Three.

The problem is inherent in what Butler Shaffer calls “institutionalization.” As Shaffer described it, the difference between an institution and other organizations is that an institution is unaccountable to those who make it up, and has a purpose independent of those who serve it. It also has “a leadership that differentiates itself from those who make up the organization,” with the leaders viewing their own function “as being to manipulate, threaten, induce, or coerce the group members into subordinating their personal interests and promoting organizational purposes.” On the other hand,

[i]n *noninstitutional* systems, the organization tends to be little more than a convenience, an informal tool of cooperation that helps each one of us to further our interests through the group. The organization has no independent purposes of its own, but represents only the composite of our personal objectives. The *organization* does not control us, for there is no division of purpose--and thus, no conflict--between personal and group purposes. The group is but a reflection of the interests of those within it: it has no independent identity or other organizational interests that could preempt our own. If the group has any leadership, it tends to be temporary and informal....¹

Shaffer's typology of organizations resembles that of Paul Goodman. The more differentiated the hierarchy and the more formalized its procedures, and the more members feel the necessity of going through “proper channels” to exert nominal control over the organization, the more likely that it has become an institution. Like Goodman, he contrasts the early university system, which was a cooperative arrangement between students or teachers to pursue their own purposes, to the bureaucratic universities of the present day with their boards of directors representing institutional interests entirely

¹ Butler Shaffer, *Calculated Chaos: Institutional Threats to Peace and Human Survival* (San Francisco: Alchemy Books, 1985), p. 10.

separate from students and faculty.²

Shaffer distinguishes what he calls "member-oriented and member-controlled" organizations from institutions, "whose objectives interfere with personal purposes and generate conflict in society."

The natural order of things is for organizations to be formed by voluntary association and cooperation, between individuals pursuing their own interests. Institutions predominate only when the state erects entry barriers to such self-organization, diverts resources to institutions, and otherwise crowds out self-organization, so that the range of alternatives is restricted and people are artificially dependent on institutions. In short, the large, hierarchical, managerial organization is the result of privilege.

Self-employment, whether individually or through worker cooperatives and peer production, is the answer to all the agency and knowledge problems we considered in Part Three.

The obvious response to this claim is the commonly raised question: if cooperatives are so much more efficient than hierarchical, absentee-owned enterprises, why are they so rare, and why do they struggle so hard to survive? In other words, if you're so smart, why ain't you rich?

As we saw in Chapter One, Oliver Williamson tends to view present ownership patterns and distribution of capital as evidence of some sort of generic "efficiency" in the market, taking the existing environment as a fair approximation of a free market. He identifies the real with the rational: consider for example, the way he answers Branko Horvat's analogy of a transplant host's body rejecting alien tissue, used to explain the rate of failure of cooperative enterprise in a capitalist system:

I submit, however, that short-term bank and trade credit are more accurately described by a physical analogy. They are more nearly akin to iron filings in a magnetic field. The prospect of high (risk-adjusted) returns presents a well-nigh irresistible attraction to liquid reserves. To be sure, local exhortations to discriminate can be temporarily effective. But venture capitalists are unprincipled in their search for profit. Capital displays an inexorable tendency to equalize returns at the margin.³

Williamson here badly misconstrues Horvat's thesis. The structural issue is not simply the cultural attitudes of individual investors ("local exhortations to discriminate"). Of course, the comparative rate of return between enterprises will tend to overcome such prejudices in the long term, when it comes to the allocation of investment capital. The

² Ibid., p. 15.

³ Oliver Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (New York: Free Press; London: Collier Macmillan, 1985), p. 266.

structural issue is, rather, what determines those comparative rates of return themselves. The state subsidizes the large, hierarchical, capitalist enterprises against which cooperatives compete, thus rendering them artificially profitable and competitive against alternative forms of organization.

Williamson also argues that the moral hazard (threat of expropriation of investors) is greater with external financing of cooperative enterprises, because debt owners are not effectively represented in the governance of the enterprise. Therefore, the cooperative is forced to rely more heavily on internally generated investment funds.⁴

What Williamson ignores here is the historical role of primitive accumulation in vesting such investment decisions in the hands of a class of large absentee owners in the first place. The very predominance of large firms, and ownership of investment capital by large absentee investors--itself to a large extent a creation of the state--marginalizes the firm with internally generated revenue. In an alternative economy--arguably the outcome of a free market--in which the predominant firm was smaller and internal financing was the rule, the competitive disadvantage of relying on internal financing would be far less.

The comparative success rate of cooperatives is distorted by several factors, with structural forces primary among them.

It is a commonplace of social analysis that every society promotes, both explicitly and tacitly, certain forms of productive organization by reinforcing the conditions for growth and survival of some types of enterprise while ignoring or even opposing other possibilities. Specifically, in the United States, the very forms of legal structure, access to capital, entrepreneurship, management, the remuneration of workers, and education all favor and reinforce the establishment and expansion of hierarchical corporate forms of enterprise and simultaneously create barriers to cooperative ones. Worker cooperatives are anomalies to these mainstream trends.⁵

One example of such structural forces is the capitalist credit market, which tends to be hostile because the cooperative form precludes lender representation on the board of directors, and seriously limits the use of firm equity as collateral. Dealing as equals with managers who can be replaced by their workers also presents cultural difficulties for conventional banks.⁶

The grossly uneven distribution of wealth, resulting from land expropriations and

⁴ Ibid., p. 267.

⁵ Robert Jackall and Henry M. Levin. "Work in America and the Cooperative Movement" in Jackall and Levin, ed., *Worker Cooperatives in America* (Berkeley, Los Angeles, London: University of California Press, 1984), p. 10.

⁶ Ibid., p. 10.

other forms of "primitive accumulation," and from state-imposed unequal exchange (i.e., privilege), amounts to a "subsidy of history." The lack of wealth puts constraints on access to credit, which means that

the pattern of ownership and control depends on the distribution of wealth. In particular, the predominance of capitalist firms... is attributable to the credit constraints facing workers....⁷

There is also a considerable element of "lemon socialism" involved in the history of producer cooperatives. Historically, producer cooperatives have tended to be formed by employee buyouts of foundering enterprises, in order to prevent unemployment. And given the discriminatory nature of credit markets, cooperatives also tend to be formed in relatively non-capital-intensive fields with low entry barriers, like restaurants, bookstores, and groceries; and industries with low entry barriers tend for that reason to have high failure rates.⁸

A. Self-Employment: Increased Productive Efficiency

Matthew Yglesias describes what he calls the "office illusion"--that "being in the office" is, "as such, working":

Thus, minor questions like *am I getting any work done?* can tend to slip away. Similarly, when I came into an office every day, I felt like I couldn't just leave the office just because I didn't want to do anymore work, so I would kind of foot-drag on things to make sure whatever task I had stretched out to fill the entire working day. If I'm not in an office, by contrast, I'm acutely aware that I have a budget of *tasks* that need to be accomplished, that "working" means finishing some of those tasks, and that when the tasks are done, I can go to the gym or go see a movie or watch TV. Thus, I tend to work in a relatively focused, disciplined manner and then go do something other than work rather than slack off.⁹

The downside of telecommuting, for a wage-earning or salaried employee, is that it blurs the distinction between ownlife and time that belongs to the employer. Yglesias' experience is probably atypical: work is never really "over" for most people who telecommute for a wage. If it's a typical white collar cubicle job being done from the home office, there's most likely no magic point at which the worker can say "my work is done" and turn off the phone.

⁷ Samuel Bowles and Herbert Gintis. "The Distribution of Wealth and the Viability of the Democratic Firm," in Ugo Pagano and Robert Rowthorn, eds., *Democracy and Efficiency in the Economic Enterprise*, a study proposal for the World Institute for Development of Economic Research (WIDER) of the United Nations University (London and New York: Routledge, 1996), pp. 83-84.

⁸ Jackall and Levin, "Work in America and the Cooperative Movement," p. 9.

⁹ Matthew Yglesias, "The Office Illusion," *Matthew Yglesias*, September 1, 2007 <http://matthewyglesias.theatlantic.com/archives/2007/09/the_office_illusion.php>.

But it stands to reason that the same principle governs, even more strongly and without the drawbacks, the full integration of work and life that comes with self-employment. Under the "face time" paradigm of wage employment at a workplace away from home, there is no tradeoff between work and leisure. Anything done at work is "work," for which one gets paid. There is no opportunity cost to slacking off on the job. In home employment, on the other hand, the tradeoff between effort and consumption is clear. The self-employed worker knows how much productive labor is required to support his desired level of consumption, and gets it done so he can enjoy the rest of his life. If his work itself is a consumption good, he still balances it with the rest of his activities in a rational, utility-maximizing manner, because he is the conscious master of his time, and has no incentive to waste time because "I'm here anyway." Any "work" he does which is comparatively unproductive or unrewarding comes at the expense of more productive or enjoyable ways of spending his time.

At work, on the other hand, all time belongs to the boss. A shift of work is an eight-hour chunk of one's life, cut off and flushed down the toilet for the money it will bring. And as a general rule, people do not make very efficient use of what belongs to someone else.

J.E. Meade contrasts the utility-maximizing behavior of a self-employed individual to that of a wage employee:

A worker hired at a given hourly wage in an Entrepreneurial firm will have to observe the minimum standard of work and effort in order to keep his job; but he will have no immediate personal financial motive... to behave in a way that will promote the profitability of the enterprise.... [A]ny extra profit due to his extra effort will in the first place accrue to the entrepreneur....

Let us go to the other extreme and consider a one-man Cooperative, i.e. a single self-employed worker who hires his equipment. He can balance money income against leisure and other amenities by pleasing himself over hours of work, holidays, the pace and concentration of work, tea-breaks or the choice of equipment and methods of work which will make his work more pleasant at the cost of profitability. Any innovative ideas which he has, he can apply at once and reap the whole benefit himself.¹⁰

Johan Soderberg describes the separation of work and play as "something of a historical parenthesis."

In agrarian society, most undertakings were mingled with an element of playfulness. Work before the breakthrough of capitalism was orientated towards the solving of specific tasks.

¹⁰ J.E. Meade, "The Theory of Labour-Managed Firms and Profit Sharing," in Jaroslav Vanek, ed., *Self-Management: Economic Liberation of Man* (Hammondsworth, Middlesex, England: Penguin Education, 1975), p. 395.

When the tasks in question had been sorted out, an extended period of celebrations followed.... With industrialisation came a reorientation where work was seen as a clearly defined space separated from life in general.¹¹

The tendency to goof off results at least as much from the nature of wage employment itself as from the "office illusion." Any particular task is devoid of intrinsic motivation, whether it be the sense of craftsmanship that comes from work under one's control, or the knowledge that a discrete portion of one's livelihood depends on performing that task to the satisfaction of a particular customer. In self-employment, on the other hand, if there is not a good reason to perform a task based on one's own personal values, then it just doesn't get done.

B. Cooperatives: Increased Productive Efficiency.

It's quite odd, considering the management behaviors we discussed in Chapter Eight--starving, milking, asset stripping, hollowing out, etc.--that so many orthodox organization theorists have negative things to say about the agency problems of worker cooperatives compared to the typical capitalist firm. Consider, for example, this quote from Richard Posner:

The economic literature on worker cooperatives identifies objections to that form of organization that are pertinent to university governance. The workers have a shorter horizon than the institution. Their interest is to get as much from the institution as they can before they retire; what happens afterwards has no direct effect on them unless their pensions are dependent on the institution's continued prosperity. That consideration aside (it has no application to most professors' pensions), their incentive is to play a short-run game, to the disadvantage of the institution--and for the further reason that while the faculty as a group might be able to destroy the institution and if so hurt themselves, an individual professor who slacks off or otherwise acts against the best interests of the institution is unlikely to have much effect.¹²

Posner, apparently, is living in a bearded-Spock universe where Robert Nardelli, "Chainsaw Al" Dunlap, and Carly Fiorina never existed. The typical CEO has the "time horizon" of a mayfly.

A major exception is Oliver Williamson, who is far more aware than most orthodox org theory writers of the internal monitoring problems of the traditional capitalist firm--along with the agency problems resulting from impacted knowledge. David Prychitko writes:

¹¹ Soderberg, p. 167.

¹² Richard Posner, "The Summers Controversy and University Governance," *The Becker-Posner Blog*, February 27, 2005 <http://www.becker-posner-blog.com/archives/2005/02/the_summers_con_1.html>.

All too often..., the unintended, undesirable consequences of monitoring... are overlooked in the theoretical literature.... Moreover, when one considers the degree to which our knowledge is embodied in tacit skills and judgment..., the extent to which real world monitors can technically obtain the information required for efficient metering as the models suggest becomes somewhat questionable. Williamson's awareness of information being "impacted" within a team of workers accords well with this view of knowledge: much of the knowledge embodied in team production may not be adequately observed by a monitor or efficiently communicated to a central metering authority. In fact, each team worker may have a better idea of what the others are doing (and are able to do) than a monitor, even though any particular worker may not be able to articulate that knowledge to a monitor. Under these cases the cooperative format may handle the monitoring problems more effectively than the traditional business organization.¹³

We saw in the previous section that, under self-employment, workers fully internalize the results of their efforts, and are therefore free to set the balance between effort and consumption on the job. The same is as true of collective self-employment, in a cooperative, as it is of individual self-employment. For that reason, a worker cooperative is unlikely to maximize productivity through the kind of "management by stress," or speedup, that we described in Chapter Ten. Jaroslav Vanek describes labor self-management as "the optimal arrangement when it comes to the finding of the utility-maximizing effort, the proper quality, duration and intensity of work, by the working collective."¹⁴

For example, in the Zanon tile factory, the largest recuperated enterprise in Argentina, cycle time on the ovens has been increased from 28 to 35 minutes. Describing the changed pace of production, a worker says:

"When we had an owner, I couldn't talk the way we are right now. I couldn't even stop for a couple of minutes. Now I work calmly, with my conscience as my guide, and without a boss yelling that we have to reach the oh-so-important objective. Back then we ran very short oven cycles. It got down to twenty-eight minutes, when the recommended time is thirty-five or more, as we do it today."

What's the difference? "it was really easy to burn your hands and because of the speed of the machines, you couldn't stop them to make adjustments. You had to fix them while they were running, which led to many accidents. You could easily lose two or three fingers."¹⁵

¹³ David L Prychitko, *Marxism and Workers' Self-Management: The Essential Tension* (New York; London; Westport, Conn.: Greenwood Press, 1991), pp. 120-121n.

¹⁴ Jaroslav Vanek, "Decentralization under Workers' Management: A Theoretical Appraisal," in Vanek, ed., *Self-Management*, p. 360.

¹⁵ The Lavaca Collective, *Sin Patron: Stories from Argentina's Worker-Run Factories*. Translated by Katherine Kohlstedt (Chicago: Haymarket Books, 2007), pp. 60-61.

Even so, worker self-management is uniquely suited to improving productive efficiency, in the proper sense of eliminating wasted effort, rather than increasing effort per worker.

As we saw in Chapter Five, Friedrich Hayek, in criticizing the planned economy, stressed the importance of distributed, idiosyncratic knowledge that could not be fully encompassed by state planners.

The same principle applies to those at the top of the large corporation. As Paul Goodman wrote,

A chief cause of the absurdity of industrial work is that each machine worker is acquainted with only a few processes, not the whole order of production. And the thousands of products are distributed he knows not how or where. Efficiency is organized from above by expert managers who first analyze production into its simple processes, then synthesize these into combinations built into the machines, then arrange the logistics of supplies, etc., and then assign the jobs.

As against this efficiency organized from above, we must try to give this function to the workers. This is feasible only if the workers have a total grasp of all the operations.¹⁶

The same is as true of agency and incentive problems as of information problems. Labor tends to be more productive in producer cooperatives because of reduced agency problems. As Jaroslav Vanek puts it, the production worker in a worker-managed enterprise is more likely to devote his mental energy to "reflection on how to improve the performance of his enterprise instead of how to minimize his effort without it being noticed by his supervisors...."¹⁷ Capitalist firms "hire workers under wage contracts."

This arrangement gives employees few positive incentives to maintain high levels of productivity. If the workers are able to organize effectively, they can confront capital with costly disruptions of production, reduced labor discipline, and higher costs of production. Even in the absence of trade unions, there is always the threat of clandestine challenges to production, such as sabotage. Thus, a capitalist firm takes the risk that the expected value of labor productivity and its costs may be subject to high variability.... In contrast, the producer cooperative is able to avoid these risks and can depend upon reasonably predictable productivity and cost relations for both labor and capital....

Producer cooperatives have two major characteristics that differentiate them from capitalist firms. And these divergences create differences between the two types of firms in the incentives to contribute to the productive effort as well as in the organization of the

¹⁶ Paul and Percival Goodman. *Communitas: Means of Livelihood and Ways of Life* (New York: Vintage Books, 1947, 1960), pp. 156-57.

¹⁷ Jaroslav Vanek, *The General Theory of Labor-Managed Market Economies* (Ithaca and London: Cornell University Press, 1970), p. 266.

productive effort. First, cooperatives are owned by their workers. Thus, it is the workers who will share in the success of the cooperative or who will bear the consequences of its failure. Second, since a cooperative is managed according to democratic principles, the production can be organized to maximize the interests of the workers....

These differences lead to rather different individual and collective incentives for workers in the two types of firms as well as to differing abilities of workers to organize production to maximize their own interests. More specifically, there is a greater incentive for cooperative members to be productive because of the rather direct connection between the success of the cooperative and their own personal gain....

In addition, there are two major influences that tend to reinforce work effort and productivity in a cooperative. First, if a cooperative does well, all of the workers will be better off. Second, the workers tend to reinforce the productivity and work effort of their members through collegial support and peer pressure. Since the work process is determined democratically, all workers participate to some extent in governing the firm. Further, every worker knows that if difficulties arise in his part of the productive process he will be helped by his fellow workers. There is strong social reinforcement and camaraderie for working together and making a contribution, and likewise there are powerful forms of social sanctioning and disapproval for members who are not putting out a maximum effort.

Although capitalist firms may set out pay structures and procedures for promotion that will reward individual productivity, the system must be administered by procedures and persons external to the work process rather than functioning as an integral part of that process, as happens in cooperative firms. Furthermore, the informational and administrative requirements for identifying and rewarding individual differences in productivity would create unduly high informational and transaction costs for a capitalist firm. Thus, for a capitalist firm the procedures for establishing pay and status preferences must be only approximate with respect to productivity differences, and will usually correspond to the nature of the worker's category and experience rather than to direct measures of productivity. Accordingly, for capitalist workers the ties between the incentive structures and productivity tend to be much less direct and more approximate than the rather direct and more accurate connections for cooperative workers.

Moreover, the social enforcement from worker peers that is integral to a collective organization is antithetical to a capitalist organization, where workers are placed in direct competition with one another for employment, promotions, and pay.¹⁸

Regarding this last, the practice of endless downsizing also tends to promote hostility between workers in different departments, as workers understandably see demands from "internal customers" as an added burden on themselves when they are already unable to handle their existing workload. The workplace becomes a snake pit: sometimes, different departments struggle openly over the assignment of particular job

¹⁸ Henry M. Levin. "Employment and Productivity of Producer Cooperatives," in Jackall and Levin, ed., *Worker Cooperatives in America*, pp. 24-26.

responsibilities; sometimes, workers attempt to get ahead of their own backlog by surreptitiously pushing off work on coworkers. In any case, management exhortations like “T.E.A.M.: Together Everyone Achieves More” ring hollow, like throwing a single bone into a yard full of hungry dogs and saying “OK, y’all play nice, now, you hear?”

One big difference between the capitalist enterprise and the workers' cooperative is that in the cooperative, workers

have a great incentive to take care of the machinery and the other capital with which they work and thus to reduce breakdowns and increase the productive life of the capital. By contrast, in capitalist firms there is often a disdain for the condition of the equipment and even an incentive to permit it to malfunction and break down to provide temporary respite from the work process.¹⁹

Further, when workers not only don't share in the owners' profits, but are disgruntled by downsizings and speedups, they may be motivated toward individual acts of sabotage (in both the narrow sense of outright destruction of property, and the broad sense of raising costs and lowering productivity) out of pure spite.

Edward Greenberg contrasts the morale and engagement with work, among the employees of a capitalist enterprise, with that of workers who own and manage their place of employment:

Rather than seeing themselves as a group acting in mutuality to advance their collective interests and happiness, workers in conventional plants perceive their work existence, quite correctly, as one in which they are almost powerless, being used for the advancement and purposes of others, subject to the decisions of higher and more distant authority, and driven by a production process that is relentless....

The general mood of these two alternative types of work settings could not be more sharply contrasting. To people who find themselves in conventional, hierarchically structured work environments, the work experience is not humanly rewarding or enhancing. This seems to be a product of the all-too-familiar combination of repetitious and monotonous labor... and the structural position of powerlessness, one in which workers are part of the raw material that is manipulated, channeled, and directed by an only partly visible managerial hierarchy. Workers in such settings conceive of themselves, quite explicitly, as objects rather than subjects of the production process, and come to approach the entire situation, quite correctly, since they are responding to an objective situation of subordination, as one of a simple exchange of labor for wages. Work, done without a great deal of enthusiasm, is conceived of as intrinsically meaningless, yet necessary for the income that contributes to a decent life away from the workplace.²⁰

¹⁹ Ibid., p. 27.

²⁰ Edward S. Greenberg. "Producer Cooperatives and Democratic Theory" in Jackall and Levin, eds., *Worker Cooperatives in America*, p. 185.

Because of the greater intrinsic motivation of workers and the structure of self-management within the production unit itself, the administrative costs of monitoring and policing from above are greatly reduced.

...the fact that workers have incentives to produce a good product and to be highly productive means that cooperative firms need relatively few supervisors and quality control inspectors. Quality control and a disciplined work effort are internalized into the behavior of workers rather than enforced by external procedures. Thus, the cooperative is able to save the cost of a large cadre of unproductive middle managers which are an integral part of capitalist production where worker discipline and product quality must be ensured by external supervision.²¹

Greenberg notes a "striking" fact: "the vast difference in the number of supervisors and foremen found in conventional plants as compared with the plywood cooperatives."

While the latter were quite easily able to manage production with no more than two per shift, and often with only one, the former often requires six or seven. Such a disparity is not uncommon. I discovered in one mill that had recently been converted from a worker-owned to a conventional, privately owned firm that the very first action taken by the new management team was to quadruple the number of line supervisors and foremen. In the words of the general manager of this mill who had also been manager of the mill prior to its conversion,

*We need more foremen because, in the old days, the shareholders supervised themselves.... They cared for the machinery, kept their areas picked up, helped break up production bottlenecks all by themselves. That's not true anymore. We've got to pretty much keep on them all of the time.*²²

Workers in a cooperative enterprise put more of themselves into their work, and feel obligated to share their idiosyncratic knowledge--knowledge that would be exploited far more ruthlessly as a source of information rent in a conventional enterprise. Greenberg quotes a comment by a worker in a plywood co-op that speaks volumes on wage labor's inefficiency at aggregating distributed knowledge, compared to self-managed labor:

If the people grading off the end of the dryer do not use reasonable prudence and they start mixing the grades too much, I get hold of somebody and I say, now look, this came over to me as face stock and it wouldn't even make decent back. What the hell's goin' on here?

[Interviewer: That wouldn't happen if it were a regular mill?]

That wouldn't happen [In a regular mill].... he has absolutely no money invested in the product that's being manufactured.... He's selling nothing but his time. *Any knowledge he*

²¹ Levin, p. 27.

²² Greenberg, p. 193.

has on the side, he is not committed or he is not required to share that. [emphasis added]

It took me a little while to get used to this because where I worked before... there was a union and you did your job and you didn't go out and do something else. Here you get in and do anything to help.... I see somebody needs help, why you just go help them.

I also tend to... look around and make sure things are working right a little more than... if I didn't have anything invested in the company.... I would probably never say anything when I saw something wrong.²³

The Mondragon cooperative system has lower rates of absenteeism, lower turnover, and better maintenance and care for equipment, than capitalist enterprises.²⁴

One worker in the *Union y Fuerza* recuperated enterprise in Argentina observes: "It's not the same when there is a supervisor looking over your shoulder, as when you are working for your own enterprise. There are companeros here that come to work even when they're sick. If you're lazy, your own coworkers will come and tell you to get with it."²⁵

One recurring observation by workers in the recuperated enterprises of Argentina is that, as they learned, production labor as such had never been the source of high costs. The main source of high overhead costs was management salaries.²⁶

The books worked out well [in the *Union y Fuerza* enterprise]. They discovered that one of the differences from the previous management was the managerial cost (despite the fact that even they had bought into the neoliberal mantra according to which modern economies don't work because of labor costs).

The company's owner... would take home 25,000 pesos a month during hard times, and up to 50,000 if he thought it necessary. And there was a group of managers. "The engineer earned 6,000 pesos, and there were six or seven others at about that same figure, and another fifteen people making 3,500 to 4,000 pesos."²⁷

From what we saw in Chapter Eight of the standard GAAP accounting practice of treating labor as the only direct cost, and treating management as a fixed cost with virtually no regard to the volume of business, this should come as no surprise. And given the greatly increased share of total employee compensation going to management salaries over the past thirty years, likewise, it should also come as no surprise.

²³ Ibid., p. 191.

²⁴ Levin, pp. 26-27.

²⁵ The Lavaca Collective, p. 193.

²⁶ Ibid., pp. 185, 217.

²⁷ Ibid., p. 192.

The Coventry system in England, described by Seymour Melman,²⁸ resulted in increased productivity. Management abandoned it because they perceived it "as leading to a diminution in managerial decision power." As we saw in Chapter Eight, when the preconditions for increased profitability are directly at odds with management's desire for control, the productivity of the enterprise gets the hind tit.²⁹

These generalizations about increased productivity are true even of what Winfried Vogt called the "liberal firm,"³⁰ a capitalist-owned firm with comparatively high degrees of worker self-management and profit-sharing.

Experiments with worker self-management over the years have demonstrated clear productivity advantages. For example, the Tavistock Institute for Human Relations conducted an experiment in the British coal mining industry. Instead of breaking production down into its simplest component jobs and then assigning a worker to each job, the prevailing "longwall" practice,

the group itself managed the entire job and assigned workers according to need and preference.... Instead of being paid on individual piece rates, the workers were given productivity-linked wages, based on group performance.

The results were rather striking. The conventional unit registered only 78 percent of full potential productivity; the other unit registered 95 percent. Worker morale improved.... Sickness absenteeism was 8.9 percent on the conventional unit, 4.6 percent on the other; absenteeism with no reason given was 4.3 percent on the conventional unit, more than ten times the 0.4 percent on the other. There were also other improvements, such as the virtual disappearance of the need for supervision in the improved unit, and more regular production.

However, David Jenkins reports, "the results of the experiment were not enthusiastically received in British power circles"--in part because of "the threat to the larger social system of the implications of a thorough rational reform."³¹

Tom Peters relates the account of an MBA student who had been operations manager for the San Francisco branch of a major trucking company, the least profitable operation in the district. He began to involve drivers in the routing decisions previously made by supervisors with little or no input. He also began to involve them directly in soliciting new customers. Some salesmen, realizing the drivers were getting more new customers than they were, rode along to learn the technique. The operation became profitable. That state of affairs lasted, he said, "until my boss saw what was happening and became

²⁸ Seymour Melman, *Decision-Making and Productivity*.

²⁹ Melman, *Profits Without Production* (New York: Alfred A. Knopf, 1985), pp. 128-129.

³⁰ Winfried Vogt. "Capitalist Versus Liberal Firm and Economy: Outline of a theory," in Pagano and Rowthorn, eds., *Democracy and Efficiency in the Economic Enterprise*.

³¹ David Jenkins, *Job Power: Blue and White Collar Democracy* (Garden City, New York: Doubleday & Company, Inc., 1973), pp. 180-181.

nervous of the leeway given the Teamsters. About that time, the company instituted a control system that required every Teamster to account for every fifteen minutes of his work day. Profitability disappeared and customer complaints increased."³² As usual, an experiment in worker self-management was terminated despite skyrocketing morale and productivity, because management saw it as a threat to their control of the organization for their own purposes. In addition, in management perception, workers' power to increase productivity is also a power to destroy. Workers' direct control of their own work process may lead to increased productivity, but it also makes management more vulnerable to workers in the event of a dispute; hence the motivation for deskilling.

Profit-sharing and other incentive systems also have a significant effect on productivity. Harvey Leibenstein refers to a wide range of studies on the increased outputs resulting from improved incentive systems. In Britain, a literature review found increases ranging from 7% to 291%, with about half of them falling into the 43-76% range. Production increases ranged from 20-50% in Australia, and in the Netherlands averaged 36.5%. And these were all *sustained* increases.³³

A classic example of a liberal capitalist enterprise is the Brazilian industrial equipment manufacturer Semco, which has extraordinarily high levels of self-management and profit-sharing. Levels of self-management and profit-sharing had been quite high by conventional standards since Ricardo Semler took over the family company in the '80s, with 25% of profits distributed to employees. But faced with the combination of a deep recession and a Brazilian law requiring two years severance pay for laid off employees, Semler was forced to take far more drastic measures.

Then a worker's committee approached Semler with a proposal. They'd take a pay cut, but with three conditions. First, the profit-sharing percentage would be increased until salaries could be restored. Second, management would take a forty percent cut in salary. And, third, the workers would get the right to approve every expenditure. Semler agreed.

In the plants, workers started handling multiple job duties and using their knowledge of how the factory worked to come up with new procedures that saved time and money. At one factory they divided themselves into three manufacturing units of about 150 people each. Each unit had complete responsibility for manufacturing, sales, and financial management. The new Semco was being born.

The autonomous team idea was adopted throughout the company. As it evolved the teams began hiring and firing both workers and supervisors by democratic vote. Policy manuals disappeared to be replaced by a policy of common sense. There is an actual manual, though. It runs about twenty pages and is filled with cartoons and brief statements of

³² Thomas J. Peters and Robert H. Waterman, *In Search of Excellence: Lessons from America's Best-Run Companies* (New York: Warner Books, 1982), pp. 237-238.

³³ Harvey Leibenstein, "Allocative Efficiency vs. 'X-Efficiency'," *American Economic Review* 56 (June 1966), p. 401.

principle....

Today's Semco doesn't have a traditional management hierarchy or typical organizational chart, or even a matrix or lattice management structure. The company is effectively made up of autonomous, democratically run units. The model of organization is that of concentric circles....

....Associates set their own salaries which are publicly posted and worked into the budgets. All meetings are open to any Associate who wants to attend. Financial information is available to anyone who wants to see it and courses are available to help them understand what they see.³⁴

Another liberal capitalist firm, W.L. Gore, has self-organized work teams and self-directed projects that resemble the functioning of peer production groups:

"I came from a very traditional male-dominated business -- the men's shoe business," [Diane Davidson] recalls. "When I arrived at Gore, I didn't know who did what. I wondered how anything got done here. It was driving me crazy." Like all new hires, Davidson was given a "starting sponsor" at Gore -- a mentor, not a boss. But she didn't know how to work without someone telling her what to do....

...She eventually figured out that "your team is your boss, because you don't want to let them down. Everyone's your boss, and no one's your boss."

What's more, Davidson saw that people didn't fit into standard job descriptions. They had all made different sets of "commitments" to their team, often combining roles that remained segregated in different fiefdoms at conventional companies, such as sales, marketing, and product design....

...[Gore's knack for innovation] springs from a culture where people feel free to pursue ideas on their own, communicate with one another, and collaborate out of self-motivation rather than a sense of duty. Gore enshrines the idea of "natural leadership." Leaders aren't designated from on high. People become leaders by actually leading, and if you want to be a leader there, you have to recruit followers. Since there's no chain of command, no one has to follow. In a sense, you become a talent magnet: You attract other talented people who want to work with you.³⁵

One of the most widely known and practiced versions of liberal capitalism is the Scanlon Plan. According to Karl Frieden,

The Scanlon Plan utilizes a company-wide incentive system with three basic elements:

³⁴ Wally Bock, "Lessons from Semco," *Monday Memo*, May 12, 2003
<<http://www.mondaymemo.net/030512feature.htm>>.

³⁵ Alan Deutschman, "The Fabric of Creativity," *Fast Company*, December 19, 2007
<<http://www.fastcompany.com/node/51733/print>>.

(1) teamwork, with a common objective of increasing output; (2) a suggestion system that channels cost-saving ideas from the workforce through a labor-management committee structure that evaluates and activates accepted suggestions; (3) a bonus system based on a formula that measures productivity gains and establishes a procedure for sharing the gains equitably among the workers.

The bonus system is directly related to productivity improvements. Seventy-five percent of all labor cost savings are given to workers as bonuses. The Scanlon Plan's bonus structure differs from profit-sharing in that the incentives are based in changes in the *value* of produced goods rather than profits derived from the *sales* of produced goods....

The Scanlon Plan indirectly utilizes two primary aspects of worker ownership--the sharing by workers in decision-making and other responsibilities of production, and sharing in the profits earned through production.³⁶

The Plan was devised by Joe Scanlon, based on his experiences as president of a union local in the steel industry in the 1930s. He convinced both management and the union local at a failing plant to accept the basic ideas entailed in what later became the Plan, resulting in an enormous productivity increase. He introduced the first version of the Plan under his name, based on what he'd learned from similar experiences in a number of other plants, in 1945. The prototype Plan first appeared in the Adamson Company, a small maker of welded steel tanks in Ohio; it resulted in a 150% increase in profits the first year, and an employee bonus of 41% the first year and 54% the second. In 1946 it was adopted by the Lapointe Machine Tool Company of Hudson, Mass., and increased production 61% in twenty months.³⁷ A study of ten representative Scanlon plants in 1958 found productivity increases averaging 23% in the first two years after adoption.³⁸ By the late '60s, some 500 plants had adopted the Scanlon Plan.³⁹

Even modest improvements in labor relations and the perceived sympathetic attitude of management can have enormous effects, as witnessed by the "Hawthorne effect" of production increases (ranging from 13 to 30%) associated with increased management attention. Leibenstein cites an ILO mission to a Pakistani textile mill that, following improved labor relations, increased productivity 30% and reduced turnover 20%.⁴⁰

And even modestly improved working conditions can result in significant productivity increases. For example, the "shorter-hours" movement in Western Europe and the United States actually found, not just increased *rates* of output, but often

³⁶ Karl Frieden, *Workplace Democracy and Productivity* (Washington, D.C. : National Center for Economic Alternatives, 1980), pp. 27-28.

³⁷ "The Scanlon Plan," *Time*, Sept. 26, 1955

<<http://www.time.com/time/printout/0,8816,807657,00.html>>; Frieden, p. 29.

³⁸ Frieden, p. 28.

³⁹ *Ibid.*, p. 27.

⁴⁰ Leibenstein, "Allocative Efficiency vs. X-Efficiency," p. 401.

increased *absolute* output, with reduced hours. Increased hours were associated with increased absenteeism and accidents.⁴¹

Even "job enrichment," liberal capitalism at its most tepid, has produced positive results. In an experiment at ICI, a group of salesmen who were given "enlarged responsibility and authority within certain limits" increased sales 19%, while the control group experienced reduced sales.⁴²

The Harwood company was a relatively liberal pajama manufacturer which encouraged employee participation, in part because in 1948 it had been the subject of a behavioral experiment designed by expatriate German psychologist Kurt Lewin.⁴³ In 1962 it acquired its unusually autocratic (and failing) main competitor, the Weldon company. The new Harwood-Weldon management had trouble getting across to Weldon's old plant manager ideas like "[on] matters which the workers know best--their own jobs, conditions in the shop, operation of machines--they have far more informed opinions than top managers who lack first-hand experience." Nevertheless, the new culture gradually caught on.

When thoroughgoing technical changes were made, employees at all levels were fully informed of the changes, and their opinions were solicited. On the shop floor, supervisors and machine operators participated in discussing, and finding solutions for, problems. At first, many operators were skeptical; said one: "You mean they are really going to let us talk about what is going on even if we think they are doing things wrong?" But when it became apparent that management would not only listen to complaints but would even put suggestions for improvement into operation, even lower-level workers became convinced.

Over a two-year period, monthly turnover fell from 10% to 4%, and daily absenteeism from 6% to 3%. Return on capital increased from -15% to 17%.⁴⁴

The R. G. Barry corporation experimented, at its main plant in Columbus, Ohio, with an expanded worker participation in organizing production. It shifted from an assembly line where each worker did one job in isolation, to small product lines where groups of workers worked together. The plant pulled quality control off the line, among many other changes.

"We pulled the quality inspectors off the line," Fisher said, "and asked the workers if they would like to inspect their own work. The quality level improved tremendously." The basis of the system is full participation. Says Woodruff: "We give the groups all information on

⁴¹ Ibid., p. 402.

⁴² Jenkins, *Job Power*, p. 182.

⁴³ Raymond A. Katzell and James T. Austin, "From Then to Now: The Development of Industrial-Organizational Psychology in the United States," *Journal of Applied Psychology*, 1992, Vol.77, No. 6, p. 809.

⁴⁴ Jenkins, *Job Power*, pp. 188-190.

costs, markups, selling prices, competition, and so on, and we tell them they can do anything they want as long as they accept responsibility for keeping cost at or below the former standard." The number of maintenance men was reduced from seven to four--partly because the mechanics... suggested some preventive maintenance and partly because the operators now did some of their own maintenance.

Despite some initial losses from disruption associated with the changeover, over the next year production increased 25% and earnings per share 55%.⁴⁵

At Texas Instruments, an initially modest job enrichment program was expanded into an ambitious attempt to reduce the functional gap between production workers and managers, and to involve workers in the overall design of the production process. The general company culture itself reflected unusually democratic values--no management parking spaces, no executive dining room, no "hierarchy of office furnishings." In one case company management mistakenly offered a gross under-bid on a radar contract, under which it was suffering heavy losses. A foreman asked ten assemblers from the line for suggestions.

The girls broke down the operations in assembly, studied every operation, and after several hours had made some forty suggestions. At the time, manufacturing the equipment required 138 man-hours, and it would not be profitable unless that figure were brought down to under 100 hours. The girls' suggestions would, they assured him, result in a figure of 86 hours.

Despite the foreman's skepticism, they actually reduced assembly time to 75 hours; they asked for another meeting, and made new suggestions which cut the time to 57 hours, and then to 32.⁴⁶

At a New England electronics plant of Corning Glass, assembly lines were replaced with teams that assembled entire products, with the teams planning the work process and assigning tasks. Absenteeism dropped from 8% to 1%, rejects from 23% to 1%, and productivity rose 47%; turnover fell to 1%, compared to a regional average of 3.5%.⁴⁷

A Spaulding golf club factory in Ft. Smith, Arkansas, experimented with eliminating foremen and inspectors, and authorizing production workers to deal with defects by informing the source directly. It improved productivity significantly by taking employee suggestions for improvement seriously. The plant has costs 15% lower than those of comparable plants, higher productivity, "minor" absenteeism, and turnover of "almost zero."⁴⁸

⁴⁵ Ibid., pp. 191-193.

⁴⁶ Ibid., pp. 193-196.

⁴⁷ Ibid., pp. 196-197.

⁴⁸ Ibid., pp. 214-215.

Lincoln Electric Company, a producer of arc welding equipment in Cleveland, in 1933 turned around a failing operation by promising workers productivity bonuses if losses were eliminated. The next year the company ran at a profit, and bonuses averaged 38% of wages. From that point on, bonuses ranged from 50% to 150% of wages. Despite employee compensation roughly double the industry norm, Lincoln's labor productivity enabled it to outperform the competition. Productivity is heightened by the reduction in overhead resulting from the almost total absence of front-line supervisors and inspectors.⁴⁹

Quite simply, James Lincoln believed that workers would have no incentive to become more efficient if they believed that by so doing they would work themselves out of a job. "It is obvious that higher efficiency in any operation means that it will take fewer man-hours to do it," he wrote. "If as a result the worker loses his job more quickly (as he does now) there is no doubt that he will oppose any plan that will produce greater efficiency." Hence the continuous employment policy.

Lincoln also believed that workers had enormous reserves of underutilized talent. So he let them organize their own workplaces, paid them by the piece, and shared profits with them at year's end. As a consequence, Lincoln workers became among the best paid in corporate America....

Of course, all this had a broader business purpose. Lincoln pays its workers more because they are more efficient—two to three times more productive than the average U.S. electromechanical worker, according to one industry study. This translates into lower prices for customers and increased sales and market share for the company.

The company continued its liberal capitalist policies into the 1980s, and made a conscious decision to continue the "no layoffs" policy during the 1982 recession. Instead, the company adopted a 30-hour week with extensive reassignments. It continued to pay employee bonuses, and had regained its profitability in the late 1980s, according to a 1988 article.⁵⁰ The company continues to issue annual productivity bonuses, according to the company website, with job security after three years--although it has never exercised its reserved right to lay off those with under three years seniority.⁵¹

In 1932 Willoughby McCormick, heir to the McCormick & Co. spice company, repudiated his father's authoritarian methods. He announced wage increases and cuts in hours, and within a year the company's red ink had been replaced with black. The profit-sharing plan distributes 7.5% of pretax earnings, and more than half the company's stock is owned by employees or by the profit-sharing fund. As is usual with such experiments,

⁴⁹ Ibid., pp. 216-218.

⁵⁰ Andrew W. Singer, "How a Downturn Put One Rust Belt Company's Principles to the Test," *Ethikos*, July/August 1988 <<http://www.singerpubs.com/ethikos/html/lincolnelectric.html>>.

⁵¹ <<http://www.lincolnelectric.com/corporate/career/>>

absenteeism and turnover are low.⁵²

Proctor & Gamble's Lima, Ohio plant experimented in the late 1960s with developing the production workforce into a "community," with self-managed production teams and job rotation throughout the plant. In effect, they got enormous increases in productivity out of investing in human capital, rather than viewing production workers as a mere cost. Wages are "considerably higher" than the industry norm, but costs are half those of a conventional plant.⁵³

Of course, all these examples are anecdotal. The empirical literature on the performance results of employee self-management and profit sharing programs is uneven, often badly designed, and generally inconclusive.

To my knowledge, by far the single best literature survey on the subject, both in scope and thoroughness, is a 1995 article by Avner Ben-Ner, Tzu-Shian Han and Derek C. Jones.⁵⁴ The article is an impressive survey of most of the available studies on the productivity effects of worker participation in earnings and management. It is especially useful in its analysis of the flaws in previous studies. For example, studies that use the "first-difference" method, i.e. comparing performance before and after the introduction of participation programs, tend to show stronger correlation between participation and productivity than do studies making static inter-firm comparisons. The reason is that the former are better at controlling for other variables that are specific to individual firms, and isolating the effects of the participation programs themselves.

The article's meta-analysis is also an improvement in that, unlike many of the earlier studies, which consider the effects of only one variable without controlling for the other, it controls for the mutual interactive effects of employee control and return rights. The authors assign enterprises to sixteen cells in a two-axis classification grid, depending on the degree of employee control rights and return rights. The numbered cells range from OA₁ in the upper left corner (a conventional enterprise with no employee return or control rights) to OA₁₆ in the lower right corner (a worker cooperative with full worker residual claimancy and control of management). The authors hypothesize that there may be weak or even negative correlation between high degrees of employee control and productivity, in absence of rights to returns, as well as weak or negative productivity effects of increasing return rights without control. This means that firms in the upper right and lower left corners, with strong control rights and weak return rights (or the reverse), may have minimal productivity increases or actually suffer reductions in productivity compared to conventional firms in the upper left corner (i.e., those with no employee

⁵² Jenkins, pp. 219-222.

⁵³ Ibid, pp. 231-235.

⁵⁴ Avner Ben-Ner, Tzu-Shian Han and Derek C. Jones, "The Productivity Effects of Employee Participation in Control and in Economic Returns: A Review of Empirical Evidence," in Pagano and Rowthorn, eds., pp. 209-244.

participation in either control or returns). On the other hand, firms in the lower right-hand corner of the grid, with moderate to high degrees of both employee control and employee claims on revenue, will tend to have the highest productivity increases from employee participation.

The authors find that meta-analysis of previous studies confirms their hypothesis, showing that,

on average, it is PCs [producer cooperatives] in cell OA₁₆ that have higher levels of productivity, compared to hybrid forms of PCs that we assign to other cells. Also, for PCs within the OA₁₆ cell, typically it is those PCs which have the highest degree of participation in control and in economic returns that perform best.⁵⁵

Generally speaking, in the liberal firm, increased worker self-management is more likely to increase productivity if it is combined with a significant amount of profit-sharing or residual claimancy. The reverse is also true: profit-sharing programs are far more effective when combined with a high degree of self-management.⁵⁶ When the two are divorced, participatory management is likely (for understandable reasons) to be seen as a way of looking for ways to work more efficiently for the boss's benefit and screw yourself out of a job. And things like ESOP programs with non-voting shares are likely to have limited productivity benefits if workers--who possess direct knowledge most relevant to increasing work efficiency--lack the authority to put their ideas into practice.

When liberal capitalist experiments with self-management and profit-sharing "fail," it's usually not because they don't increase productivity, but because they're seen as a threat to management interests.

A good example is the Kaiser Steel pipe manufacturing plant in Fontana, California, which management had concluded was simply unable to compete with the Japanese. The union persuaded management to agree to a labor-management committee to stop the plant from shutting down. Senior management was agreeable to the project, and ordered supervisors to cooperate with workers' suggestions. Workers enthusiastically supported the program, in part because they had secured management's agreement that no increases in productivity were to be achieved by speedups: "We don't want you to work harder. We want you to work smarter."

Employee suggestions led to changes in equipment and the physical layout of the plant. The main saw, which was causing an inordinate amount of rejects, was fixed. The pipe straightener was also fixed. Inspection stations were rearranged so that the pipe could be examined more directly in the line of the process. The number of steps in the finishing mill

⁵⁵ Ibid., p. 239.

⁵⁶ Samuel Bowles and Herbert Gintis, "Is the Demand for Workplace Democracy Redundant in a Liberal Economy?" in Pagano and Rowthorn, eds., pp. 66-67.

that required storage of pipe was reduced in order to facilitate a more continuous operation. A few job positions were reassigned to make them more effective.

Communication between labor and management and between the workers themselves improved. Better communication between hot mill teams and finishing floor teams eliminated unnecessary delays and waste. When a defective pipe came to a worker on one line, instead of letting it pass by as was the prior practice, the worker would stop what he was doing and check with the previous station in order to straighten out the problem immediately. Preventive maintenance increased as the workers sought to prevent problems before they occurred. The union relaxed its work rules in some instances to allow a better utilization of the workers' skills. In general, with little expenditure of capital for replacement or repairs, a number of small changes had a powerful, cumulative effect on productivity.

(This last confirms what we already saw from Hayek, Leibenstein, and Stein on the importance of workers' idiosyncratic knowledge in achieving large productivity gains from the cumulative effects of incremental improvements. And the reduction of inventory between steps of production, and the ability of production workers to stop the line to correct defects at the source, sounds remarkably like lean production.)

Within three months, productivity increased 32%. The pipe reprocessing rate was reduced from 29% to 9%, and the time for tool changes from thirty minutes to five.

However, after a change of management, the new management gradually withdrew support from the plan. Part of the reason was management embarrassment over headlines like "Worker Takeover--Productivity Rises" in the *Los Angeles Times*. "The managers were uncomfortable with the workers' success and autonomy and the implication that the company's industrial engineers were not capable of achieving maximum efficiency."⁵⁷

Organizations, Jenkins observes, tend to be governed by a sort of homeostatic mechanism. Experiments in self-management and profit-sharing, even (or especially?) when they result in astonishing increases in productivity, meet with management hostility because they undermine the stability of the organization and threaten to require disruptive changes in the power structure. And such experiments, even (or especially) when successful, run against the grain of management's assumptions about human nature and the rightful ordering of the workplace. Such experiments are often abandoned for being *too* successful.⁵⁸

For example, an experiment at Polaroid in the early '60s with increasing the training and autonomy of machine operators, despite the success of getting new, complex machinery up and running far faster than would otherwise have been possible, was abandoned because it made the supervisors largely superfluous.

⁵⁷ Frieden, pp. 33-35.

⁵⁸ Jenkins, *Job Power*, p. 310.

"Management decided it just didn't want operators that qualified. We tried twice to reinstitute the program but had to give it up. The man who started the program quit the company." The employees' newly revealed ability to carry more responsibility was too great a threat to the established way of doing things and to established power patterns.... "The operators are still talking longingly about it."⁵⁹

More generally, although (as we saw in Chapter Ten) corporate management has adopted the rhetoric of self-management along with a dumbed-down version of the substance, the overall trends toward genuine self-management and profit sharing that Jenkins described in the 1970s were mostly abandoned not long afterward. He related described the growing unwillingness, at the time of his writing, of alienated labor to work under the old conditions, and the increasing pressure on management to concede ever-increasing levels of worker empowerment as a way of increasing productivity.

The fact is that there is a swift decline in the willingness of people to work under the antiquated conditions still characteristic of most work organizations, ... and meekly submit to the rigid discipline of the "papa knows best" system. People are no longer so impoverished that they feel compelled to put up with the prevalent structure, no longer so badly educated that they cannot see through the solemn sham that industrial-capitalist authoritarianism has become, and no longer so polite that they are willing to pretend that they do not see the fakery of it all.⁶⁰

In the end, however, corporate elites decided instead to "solve" the problem through neoliberal reaction: downsizing, wage caps, and generally using job insecurity as a way to elicit greater effort and obedience despite the levels of disgruntlement. The idea was to *make* people so impoverished, or so indebted, that they once again felt compelled to put up with the prevalent structure, and once again became willing to stop seeing through the sham and pretend they didn't see through it, because keeping a roof over their heads depended on it.

Management's desire for control, as Claire Wolfe argues, probably explains why telecommuting hasn't lived up to its hype so far:

Although computer-based "knowledge work" hasn't enabled millions of us to leave the corporate world and work at home (as, again, it was supposed to), that's more a problem of corporate power psychology than of technology. Our bosses fear to "let" us work permanently at home; after all, we might take 20-minute coffee breaks, instead of 10!⁶¹

That's the reason that so much design and IT work, and customer support, have been

⁵⁹ Ibid., pp. 314-315.

⁶⁰ Ibid., *Job Power*, p. 284.

⁶¹ Claire Wolfe, "Dark Satanic Cubicles," *Loompanics Unlimited 2005 Main Catalog* <<http://www.loompanics.com/Articles/darksatanic.html>>.

outsourced to cubicle-farms abroad, instead of to interlinked home offices.

As an a fortiori argument for the efficiency of worker ownership and self-management, consider the heroic achievements of worker self-management, in increasing output and productivity, and in product and process innovations, under some of the most adverse circumstances imaginable.

Take, for example, the work collectives in the anarchist-controlled areas of Spain. The private company which had owned the trolley systems serving Barcelona manufactured only 2% of the supplies for maintenance and repairs before the Revolution. After a year of workers' control, 98% of supplies for repair were produced in the trolley system's socialized shops. Workers in the railway repair yards of Barcelona manufactured armored cars, and produced the first ambulances only a week after returning to work.⁶² The Catalonian metal workers managed to "rebuild the industry from scratch." Despite being "very poorly developed," it converted within a few days of the July 19 uprising to the manufacture of armored cars, hand grenades, machine gun carriages, and ambulances. Four hundred new metal factories were built in Barcelona during the war. The industry built two hundred hydraulic presses of up to 250 tons pressure, 178 lathes, and hundreds of milling and boring machines.⁶³ The optical industry, an assortment of small shops before the Revolution, created a manufacturing capability virtually from scratch; the workers' syndicate financed, from worker contributions, a new factory for optical apparatuses and instruments.⁶⁴

A Spanish observer of the self-managed factories in Allende's Chile was astonished at the inventiveness of workers under the new conditions (for example, building new parts to keep old machinery running). Despite economic disruption (a lot of it resulting from shortages of raw materials in the face of efforts by Nixon and Kissinger to place the country under economic interdict), most worker-managed factories either maintained or increased labor productivity.⁶⁵

Chilean workers displayed considerable inventiveness, in coping with shortages of spare parts and special inputs resulting from the American economic blockade. At one textile factory, for example, workers invented a delay relay for a spinning machine that reduced the needs for imports by \$2000; a system for recovering escaped gas from a condenser which saved \$1200 worth of imported petroleum; heating apparatus which saved \$5000 over five years; dyeing equipment which saved \$1000 over three years; an increase in the boiler's generating capacity; an electrical system which replaced the

⁶² Sam Dolgoff, ed., *The Anarchist Collectives: Workers' Self-Management in the Spanish Revolution 1936-1939* (Montreal and New York: Black Rose Books, 1990), pp. 88-89.

⁶³ *Ibid.*, p. 96.

⁶⁴ *Ibid.*, p. 98.

⁶⁵ L.S. Stavrianos, *The Promise of the Coming Dark Age* (San Francisco: W. H. Freeman and Company, 1976), p. 73

mechanical clutch for a wreathing machine, saving \$24,000 over three years; a mechanical press for dyeing which saved \$6000; a mechanical transporting device for giant spools, which saved \$20,000. The factory expanded its machine shop and began "producing and modifying tools and equipment for other textile factories." Another textile factory's machine shop began producing 80% of the spare parts which it had imported before the blockade.⁶⁶

Another example is the recuperated enterprises in Argentina, as described by James Burke:

After an economic crisis left thousands of factories and other businesses shuttered, workers suddenly found themselves unemployed and desperately poor. As many as 10,000 of them from roughly 200 enterprises eventually said to heck with loss of income, loss of occupation, loss of dignity. Through trial, error, commitment, and organizing, they retook their former places of employment... except this time not as peons, but as owners. Today, they continue producing on an industrial, competitive scale, manufacturing everything from sewer parts to balloons, tractors to ice cream under conditions of democracy, equity, and autonomy.

Seventy percent of factories were retaken after fierce campaigns, either physical takeover or long occupations in front of the factory gates. The sit-ins lasted an average of five months - weary, often hungry, sometimes violence-filled ones.

With so many not having been paid in months, their survival choices came down, as analyst Modesto Guerrero put it, to the following: "Either they tried to occupy and work the business or they would have to go beg in the streets, prostrate themselves, steal, or wait for their luck."

Getting themselves physically back into the factories involved either cutting the locks or getting permission from the courts. What workers found once they did reenter was devastating. The places had often been ransacked by the former owners, right down to the light bulbs and business records. Machines had been stripped of every valuable part. Many of the factories were without electricity, water, or gas.

The workers usually spent many months hauling away debris. They cannibalized equipment and improvised with scrap to make at least one of each necessary machine. Neighbors donated what they could, be it their welding masks or their labor on a spare Sunday. As for what they faced in restarting production: They had no capital or credit lines with which to make over their former places of employment. For starters, they manufactured and sold infinitesimal amounts of whatever items they could produce with scrounged primary materials.

⁶⁶ Juan G. Espinosa and Andrew Zimbalist, *Economic Democracy: Workers' Participation in Chilean Industry 1970-1973*. Updated student edition (New York, London, Toronto, Sydney, San Francisco: Academic Press, 1981), p. 150.

But get back on their feet many of them did, and slowly profits began to trickle in, challenging the workers to decide how to deal with the surplus.⁶⁷

The Lavaca Collective's book on the recuperated enterprises tells many such stories. In almost every case, the same themes recur. Factories were abandoned with large unpaid debts and utility bills, and stripped of much of their equipment (or vital parts were removed). Workers in the recuperated enterprises contributed their own money, or raised funds through community drives, to pay the bills and get power and phone service up again. They cannibalized machines, or used their own money to scrounge up spare parts, to get at least one production line going; in at least one case they had to buy a generator to supply power. When production lines were up and running, workers survived on minimal pay and plowed revenues back into the enterprise to restore still more production.⁶⁸

A good example is how the Renacir cooperative (formerly the Aurora Corporation) restored production of washing machines:

With the materials they had at the plant and plenty of ingenuity, they managed to build 120 washing machines that they sold in Ushuaia for 650 pesos. With that capital they restored several parts of the plant and have managed to put together 300 more....

If everything goes well, the factory will be able to revive several lines of home appliances.⁶⁹

The recuperated Cordoba newspaper *Comercio y Justicia* (the city's second-largest newspaper), finding it impossible to restore the intranet any time soon because of the former employer's asset-stripping, resorted to hand-carrying word-processed copy on floppy disks from the newsroom to the printers.⁷⁰

C. Innovation Under Worker Self-Management.

The motivation for investment, in an economy where self-employment and worker ownership predominated, would likely be considerably different than at present. In the subsistence or household economy, where the link between effort and consumption is direct and obvious and not obscured by exchange, the producer perceives capital investment not as a way to "live off capital," but to make his own labor more efficient so that he can support himself with less effort.

⁶⁷ James Burke, "Fábricas Recuperadas: crowd-storming your own just and equitable economy in Argentina," P2P Foundation blog, May 3, 2008 <<http://blog.p2pfoundation.net/category/p2p-governance>>.

⁶⁸ Lavaca Collective, *Sin Patron*, pp. 74-75, 94, 126, 134, 190-191, 198-199.

⁶⁹ *Ibid.*, pp. 164-165.

⁷⁰ *Ibid.*, pp. 198-199.

Bastiat, in *Capital and Rent*, challenged the socialists to explain the motive for investment if there were no return on capital ("who would be willing to create the instruments of labor...?"). Charles-François Chevé, in response, wrote:

Is there no advantage to the ploughman in producing as much as possible, even though he exchanges its yield for no more than an equal value paid once, without rent or interest on capital? Is there no advantage to the industrialist in doubling or tripling his produce, even though he sells it for no more than an equivalent sum handed over once, without any interest on capital? Will 100,000 francs cease to be worth 100,000 francs because they produce no more interest? Will 500,000 francs in land, in houses, in machines or anything else cease to be 500,000 francs because one can no longer draw interest from them? In a word, will wealth, under whatever form and however acquired, cease to be wealth as soon as I am no longer able to make use of it to plunder other people? – Who will be willing to create wealth? Why, anyone who wants to be wealthy. – Who will save? Why, anyone who wishes to live the next day off the labour of the previous day. – What interest will there be in forming capital? The interest in possessing 10,000 francs when one shall have produced 10,000 francs, in possessing 100,000 when one shall have produced 100,000, and so on.⁷¹

Although apologists for capitalism directly equate the scale of accumulation to productivity and wages, there is no necessary connection between the quantity of capital investment and the increase in productivity. If anything it is likely that the predominance, under the present system, of absentee investment and the concentration of investment capital into a few hands, artificially promotes the substitution of major generational innovations and large-scale blockbuster investments for incremental improvements. It promotes, likewise, a strategy of capital substitution and deskilling, to reduce the bargaining power of labor; this is so even when a capital investment increases unit costs, if it promises to reduce the agency problems of labor. The reason is that investors find it less important to economize on capital, a factor available to them in artificially large quantities, than to avoid the agency costs that would accompany the levels of autonomy necessary for worker-directed innovation. Large-scale capital focuses on large-scale capital investment for the same reason the drunk looks for his car keys under the streetlight. Langdon Winner gives the example of McCormick's reaper plant in Chicago, where in the 1880s

pneumatic molding machines, a new and largely untested innovation, were added to the foundry at an estimated cost of \$500,000. The standard economic interpretation would lead us to expect that this step was taken to modernize the plant and achieve the kind of efficiencies that mechanization brings. But historian Robert Ozanne has put the development in a broader context. At the time, Cyrus McCormick II was engaged in a battle with the National Union of Iron Molders. He saw the addition of the new machines as a way to "weed out the bad element among the men," namely the skilled workers who had organized

⁷¹ F. C. Chevé [Charles-François Chevé (1813-1875)], one of the editors of the *Voix du Peuple*, to Frédéric Bastiat. Translation by Roderick T. Long. *The Bastiat-Proudhon Debate on Interest (1849-1850)* <<http://praxeology.net/FB-PJP-DOI-IV-1.htm>>

the union local in Chicago. The new machines, manned by skilled laborers, actually produced inferior castings at a higher cost than the earlier process.⁷²

The most efficient mixture of labor and capital would vary enormously, depending on whether capital was owned by labor seeking to maximize the return on labor, or by absentee capitalists seeking to maximize the return on capital.

Critics of worker cooperatives frequently charge that they skimp on capital investment in order to maximize employment. But to put it in less value-laden terms, that simply means that cooperatives economize on capital at the expense of labor efficiency. Capitalist enterprises, on the other hand, do just the opposite: they pursue a strategy of capital substitution in order to maximize labor efficiency, reduce labor costs, and minimize agency problems associated with labor--even when it means relying on the relatively wasteful use of large capital and energy inputs.

What's happened in the United States is that we have displaced those ways of producing goods which are efficient in using energy, efficient in using capital, and inefficient in using labor with the reverse, and the upshot is that we tend to waste energy, to run out of capital, and to run out of jobs.⁷³

What's the difference between the two approaches? The difference is that we are conditioned to see the maximization of utility by owners of capital as the normal purpose of economic activity, but to dismiss maximization of utility by labor as "malingering."

Barry Stein, as we have already seen, argues that incremental improvements in the production process, cumulatively, have more of an effect on productivity than do generational changes in production machinery.

Jaroslav Vanek makes the distinction between major and minor innovations. While major technological innovations,

if profitable, will generally find outlets into productive application whatever the economic system, the minor ones may or may not depending on the environment in which they are made.[T]he labor-managed form of productive organization is highly conducive to minor innovative activity within the firm....

Probably the best way of distinguishing between what we have termed major and minor innovations is that the latter generally cannot be the subject of a full-time professional occupation. Rather, they will arise as an externality... of an activity whose primary purpose

⁷² Langdon Winner, *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago and London: University of Chicago Press, 1986), p. 24.

⁷³ Barry Commoner, "Freedom and the Ecological Imperative: Beyond the Poverty of Power," in Richard C. Dorf and Yvonne L. Hunter, eds., *Appropriate Visions: Technology the Environment and the Individual* (San Francisco: Boyd & Fraser Publishing Company, 1978), pp. 39-42. [11-49]

is something else than to innovate--generally to produce or contribute to the production of some good or service. More concretely, ...a repeated act of production will stimulate reflection on how that act could be facilitated, or done more efficiently....

Clearly... the situation most conducive to the application of minor innovations is one of an individual self-employed producer, provided that he is not constrained by financial limitations. As far as conduciveness--or the incentive--to innovate goes, the labor-managed firm is the second-best solution.... First of all, the self-management structure... provides an excellent channel of communication, unparalleled in any other firm, between those who have innovative ideas, those who decide on an procure the capital implementation, and those who incorporate the innovation into the income-distribution scheme of the firm. Second, the innovator in the labor-managed firm need not worry that the capital owner will exploit the innovation and leave him with only a small part of the gain.⁷⁴

The reference to developing ideas for minor innovation as a side-effect of production, by the way, is reminiscent of Jane Jacobs' theory of technical innovation as finding new uses for the waste materials of an existing production process, or spinning off production techniques from existing products (for which the new techniques may not even be suitable) to new product lines. A good example is 3M (originally Minnesota Mining and Manufacturing) corporation's lines of adhesive tape (including Scotch tape), which were an offshoot of an unsuccessful experiment in developing adhesive backing for sandpaper in their primary business line.

According to Barry Stein, the cumulative effect on productivity of small, incremental innovations (i.e., Vanek's "minor innovations") is as great as that of generational leaps in technology. He cites a 1965 study of DuPont rayon plants by Samuel Hollander, which found that "'minor' technical changes--based on technology judged relatively 'simple' to develop... and usually representing 'evolutionary' advances... accounted for two-thirds of the unit-cost reductions attributable to technical change at most of the plants considered." Such incremental changes made it possible "to incorporate within a given structure sufficiently productive technology to permit an older plan to produce almost as efficiently as a newly built plant"--and "the sum total of the outlay needed to accomplish the alterations at the older plant [would be] relatively small."⁷⁵

Stein echoes the insights of Vanek and Jacobs about innovation as the byproduct of the production process.

It has already been noted that much of the technological progress within a firm is the result of a series of small innovations.... The primary source of all innovations is derived from the recognition of a need, rather than from technical opportunity, as such.... In one study, only 21 percent of the successful innovations stemmed from technical sources; 30

⁷⁴ Jaroslav Vanek, *The General Theory of Labor-Managed Market Economies*, pp. 263-264.

⁷⁵ Barry Stein, *Size, Efficiency, and Community Enterprise* (Cambridge, Mass.: Center for Community Economic Development, 1974), p. 35.

percent were a response to perception of a need/opportunity in manufacturing; and fully 45 percent were due to market factors. Such recognition of a need, whether within the firm or with respect to the outside market, becomes possible only under conditions in which workers... are more generally knowledgeable about the organization, its operation, and its relationship to its environment.⁷⁶

Likewise, the most successful product innovations often result less from generational changes or fundamentally new technologies than from tinkering with existing products. Tom Peters, in his observation of the corporate world, found numerous examples of the phenomenon:

Hewlett-Packard...: "The company is seldom first into the market with its new products.... A competitor's new product comes on the market and HP engineers, when making service calls on HP equipment, ask their customers what they like or dislike about the new product, what features the customer would like to have.... And pretty soon HP salesmen are calling on customers again with a new product that answers their needs and wants...."

IBM: Going back to its early days, IBM has seldom put products on the market that are right in the forefront of new technology. UNIVAC and others have all showed the way; IBM has learned from others' mistakes. "It was rarely the first to take a new technical step, but it wasn't far behind. And time after time, its new lines were better designed and more effectively sold and serviced than those of competitors."....

Caterpillar:"Caterpillar is rarely the first to come up with a new offering in its markets.... It has rarely built its reputation by letting other companies go through the trial and error process of introducing new products. Caterpillar later jumps in with the most trouble-free product on the market."⁷⁷

As we already saw in Chapter Five, Hayek argued for the role of the distributed knowledge of those engaged in the production process in making such incremental process and product improvements. Let's repeat his earlier quote:

To know of and put to use a machine not fully employed, or somebody's skill which could be better utilized, or to be aware of a surplus stock which can be drawn upon during an interruption of supplies, is socially quite as useful as the knowledge of better alternative techniques....

Is it true that, with the elaborate apparatus of modern production, economic decisions are required only at long intervals, as when a new factory is to be erected or a new process to be introduced? Is it true that, once a plant has been built, the rest is all more or less mechanical, determined by the character of the plant, and leaving little to be changed in adapting to the ever-changing circumstances of the moment?

⁷⁶ Ibid., p. 49.

⁷⁷ Peters and Waterman, *In Search of Excellence*, pp. 178-179.

The fairly widespread belief in the affirmative is not, so far as I can ascertain, borne out by the practical experience of the business man. In a competitive industry at any rate--and such an industry alone can serve as a test--the task of keeping cost from rising requires constant struggle, absorbing a great part of the energy of the manager. How easy it is for an inefficient manager to dissipate the differentials on which profitability rests, and that it is possible, with the same technical facilities, to produce with a great variety of costs, are among the commonplaces of business experience which do not seem to be equally familiar in the study of the economist.⁷⁸

Innovation in an economy where self-employment and worker ownership predominates would likely include efficiencies which presently go unrealized because of the special agency problems of absentee ownership and hierarchical authority.

D. Social Benefits of Worker Empowerment.

The increased bargaining power of labor and the shift to a genuine "ownership society" would have other salutary social effects. One such effect would be the restoration of the positive character and lifestyle traits commonly associated with artisan production and a self-sufficient yeomanry.

Here is Ralph Borsodi's picture of one well-rounded character typical of pre-industrial society, when the small producer often owned his means of livelihood and directed his own work:

Some quotations from the diary of Thomas B. Hazard, known as "Nailer Tom," who was a famous mechanic in those days [1780s New England], give a good idea of what this combination of many kinds of work meant to the skilled artisan before the coming of the factory:

Making bridle bits, worked a garden, dug a woodchuck out of a hole, made stone wall for cousin, planted corn, cleaned cellar, made hoe handle of bass wood, sold a kettle, brought Sister Tanner in a fish boat, made hay, went for coal, made nails at night, went huckleberrying, raked oats, plowed turnip lot, went to monthly meeting and carried Sister Tanner behind me, bought a goose, went to see town, put on new shoes, made a shingle nail tool, helped George mend a spindle for the mill, went to harbor mouth gunning, killed a Rover, hooped tubs, caught a weasel, made nails, made a shovel, went swimming, staid at home, made rudder irons, went eeling.

The notable fact in connection with all these varied activities is the admixture of work and play. If the worker "played" during the day, he labored at nail making or something else at night. The day was not divided by the clock into mutually exclusive periods of work and

⁷⁸ F. A. Hayek. "The Use of Knowledge in Society" *The American Economic Review* 35:4 (September 1945), p. 522.

non-work. Most of the play had an admixture of productive labor in it--it produced game or fish, for instance, while much of the work had elements of play in it.⁷⁹

Although Borsodi didn't make the allusion, his description sounds remarkably similar to Marx's idyllic picture of communism, in which it would be

possible for me to do one thing today and another tomorrow, to hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner, just as I have a mind, without ever becoming hunter, fisherman, herdsman or critic....⁸⁰

Science fiction writer Ken Macleod, discussing another example of subsistence worker-ownership (the Highland crofters), appealed explicitly to Marx.

In *The Sky Road* in particular, the society of the far-future Scotland [organized around the single tax and mutual banking] was one based on imagining an area that I know reasonably well and the kind of people that I know quite well - not as individuals but as a social type, if you like. A lot of these highlanders are Heinlein's omnicompetent man - they can turn their hand to anything. They're also rather like Marx's doodle about the post-class society where you could hunt in the morning, fish in the afternoon and be a critic after dinner without ever being hunter, fisherman or critic. That is literally what these guys are like.

.... The highlanders are often people who own a croft, work for wages during the day and go poaching in the evening, and who read a lot. They are people who've never really been hammered into industrial society and therefore have a flexibility. They've got to. Even Adam Smith says how in the Highlands the division of labour is less developed because there is a smaller market. If you have people who are not mangled by the division of labour being part of a much larger market as they are now, they can do all that stuff.⁸¹

An economy of self-employment or cooperative employment would restore workers' control over the pace of work, resulting in the balance of work and leisure, and of effort and consumption on the job, described above by Yglesias and the Zanon tile factory worker. It would be a restoration of the very kind of worker control over the pace of work that the factory system was designed to eliminate. E. P. Thompson contrasts the pace of work, and the sense of control, in the "older weaving communities" of Yorkshire and Lancashire to those of the factory towns:

The son of a weaver from the Heptonstall district, who was a child in the 1820s, recalled that the weavers "had their good times". "The atmosphere was not fouled by the smoke of the factory."

There was no bell to ring them up at four or five o'clock... there was freedom to start and

⁷⁹ Ralph Borsodi, *This Ugly Civilization* (Philadelphia: Porcupine Press, 1929, 1975), pp. 138-39.

⁸⁰ Karl Marx, *The German Ideology*

⁸¹ Duncan Lawie interview with Ken Macleod, *The Zone* <<http://www.zone-sf.com/kenmacleod.html>>.

to stay away as they cared.... In the evenings, while still at work, at anniversary times of the Sunday schools, the young men and women would most heartily join in the hymn singing, while the musical rhythm of the shuttles would keep time....

Some Weavers had fruit, vegetables, and flowers from their gardens. "My work was at the loom side, and when not winding my father taught me reading, writing, and arithmetic." A Keighley factory child, who left the mill for a handloom at the age of eighteen, informed Sadler's Committee (1832) that he preferred the loom to the mill "a great deal": "I have more relaxation; I can look about me, and go out and refresh myself a little." It was the custom in Bradford for the weavers to gather in their dinner break at noon:

...and have a chat with other weavers and combers on the news or gossip of the time. Some of these parties would spend an hour talking about pig-feeding, hen-raising, and bird-catching, and now and then would have very hot disputes about free grace, or whether infant baptism or adult immersion was the correct and scriptural mode of doing the thing. I have many a time seen a number of men ready to fight one another on this... topic.⁸²

J. L. and Barbara Hammond made a similar observation about the contrast between the self-paced work of the peasant or self-employed spinner or weaver, and the regimented life of the factory⁸³:

In the modern world most people have to adapt themselves to some kind of discipline, and to observe other' people's timetables, ...or work under other people's orders, but we have to remember that the population that was flung into the brutal rhythm of the factory had earned its living in relative freedom, and that the discipline of the early factory was particularly savage.... No economist of the day, in estimating the gains or losses of factory employment, ever allowed for the strain and violence that a man suffered in his feelings when he passed from a life in which he could smoke or eat, or dig or sleep as he pleased, to one in which somebody turned the key on him, and for fourteen hours he had not even the right to whistle. It was like entering the airless and laughterless life of a prison.

Yet another benefit of a worker-managed society would be a general increase in the critical intelligence which "education" has done such a good job of stamping out in our "meritocratic" society. The independent master tradesmen before the triumph of the factory system, as Thompson points out, tended toward fairly high degrees both of self-education, and of political awareness and involvement. According to one observer, for example,

[t]he moral effects of the [Sheffield] Society were great indeed. it induced men to read books instead of spending their time at public houses. It taught them to think, to respect

⁸² E. P. Thompson, *The Making of the English Working Class* (New York: Vintage Books, 1963, 1966), pp. 290-291.

⁸³ J. L. and Barbara Hammond, *The Town Labourer (1760-1832)* (London: Longmans, Green & Co., 1917), vol. 1, pp. 33-34.

themselves, and to desire to educate their children. It elevated them in their own opinions.⁸⁴

Thompson himself refers to "a leaven amongst the northern weavers of self-educated and articulate men of considerable attainments."

Every weaving district had its weaver-poets, biologists, mathematicians, musicians, geologists, botanists: the old weaver in *Mary Barton* is certainly drawn from the life. There are northern museums and natural history societies which still possess records or collections of lepidoptera built up by weavers while there are accounts of weavers in isolated villages who taught themselves geometry by chalking on their flagstones, and who were eager to discuss the differential calculus. In some kinds of plain work with strong yarn a book could actually be propped on the loom and read at work.⁸⁵

....At Barnsley as early as January 1816 a penny-a-month club of weavers was formed, for the purpose of buying Radical newspapers and periodicals. The Hampden Clubs and Political Unions took great pains to build up "Reading Societies" and in the larger centres they opened permanent newsrooms or reading-rooms, such as that at Hanley in the Potteries.⁸⁶

....The articulate consciousness of the self-taught was above all a *political* consciousness. For the first half of the 19th century, when the formal education of a great part of the people entailed little more than instruction in the Three R's, was by no means a period of intellectual atrophy. The towns, and even the villages, hummed with the energy of the autodidact. Given the elementary techniques of literacy, labourers, artisans, shopkeepers and clerks and schoolmasters, proceeded to instruct themselves, severally or in groups. And the books or instructors were very often those sanctioned by reforming opinion. A shoemaker, who had been taught his letters in the Old Testament, would labour through the *Age of Reason*; a schoolmaster, whose education had taken him little further than worthy religious homilies, would attempt Voltaire, Gibbon, Ricardo; here and there local Radical leaders, weavers, booksellers, tailors, would amass shelves of Radical periodicals and learn how to use parliamentary Blue Books; illiterate labourers would, nevertheless, go each week to a pub where Cobbet's editorial letter was read aloud and discussed.

Thus working men formed a picture of the organisation of society, out of their own experience and with the help of their hard-won and erratic education, which was above all a political picture.⁸⁷

Note well: the "desire to educate their children" mentioned above was hardly an anticipation of the emphasis placed today on the importance of "getting an education" as a means of meritocratic climbing, by currying favor with those in a position to advance one's career goals. There was little chance of "getting a good job" through the equivalent

⁸⁴ Thompson, *Making of the English Working Class*, p. 155.

⁸⁵ *Ibid.*, pp. 291-292.

⁸⁶ *Ibid.*, p. 717.

⁸⁷ *Ibid.*, pp. 711-712.

of a degree in factory management. The object of their ambition, for the most part, was rather a critical understanding of the world they live in, and the intellectual weapons needed to change it.

...[T]he artisan culture nurtured the values of intellectual enquiry and of mutuality. We have seen much of the first quality, displayed in the fight [in the post-Peterloo repression] for press freedom. The autodidact had often an uneven, laboured, understanding, but it was *his own*. Since he had been forced to find his intellectual way, he took little on trust: his mind did not move within the established ruts of a formal education. Many of his ideas challenged authority, and authority had tried to suppress them. He was willing, therefore, to give a hearing to any new anti-authoritarian ideas.⁸⁸

The general effect on working class consciousness is beautifully summed up in this collier's note to an overseer:

Noo I naw some at wor colliery that has three or fower lads and lasses, and they live in won room not half as gude as yor cellar. I don't pretend to naw very much, but I naw there shudn't be that much difference.... I dinna pretend to be a profit, but I naw this, and lots o ma marrows na's te, that wer not tret as we owt to be, and a great filosofher says, to get noledge is to naw wer ignerent. But weve just begun to find that oot, and ye maisters and owners may luk oot, for yor not gan to get se much o yor own way, wer gan to hev some o wors now.⁸⁹

For all his poor spelling, the anonymous north country author probably had more critical intelligence than the average college graduate today, who entered the human resource processing factory in hopes that a "good education" would enable him to find a "good job."

A central theme of Thompson's book is the role of master tradesmen (especially weavers and printers) in working class radicalism--the trade union movement, Owenism, Chartism, etc. "By 1832--and on into Chartist times--there is a Radical nucleus to be found in every county, in the smallest market towns and even in the larger rural villages, and in nearly every case it is based on the local artisans."⁹⁰ Hodgskin's lectures embodied in *Popular Political Economy*, from which we quoted liberally in Chapter Eleven, is an excellent illustration of working people's thirst for knowledge of political and economic affairs at the time. Christopher Lasch's *The True and Only Heaven*, likewise, contains a considerable amount of material on the role of skilled blue collar workers in the radical unionism (especially syndicalism) around the turn of the 20th century. One of the central goals of the factory system, arguably, was the suppression of this general social type. The artisans, as Thompson put it, were the "intellectual elite of the [working] class";⁹¹

⁸⁸ Ibid., p. 743.

⁸⁹ Ibid., p. 715.

⁹⁰ Ibid., p. 733.

⁹¹ Ibid., p. 716.

prophets of deskilling, from Ure to Taylor, not only aimed at eliminating them as an internal obstacle to authority relations inside the factory, but saw them as a corrupting influence on the governability of society at large.

Still another improvement is the erosion of the modern artificial distinction between work and art: a return to medieval ideas of craftsmanship in work, celebrated by Ruskin and Morris, and to amateurism in its original sense.

The world needs amateur writers, painters, sculptors, teachers and scientists. It needs men and women who can appreciate the great achievements of the arts and sciences because they are themselves engaged in contributing to them. Many of the greatest achievements of the human race in the arts and sciences have been the work of amateurs--men and women who worked in many fields and brought to bear upon each of them that fresh point of view which the specialists and technicians do not supply.

I do not mean incompetents when I speak of amateurs. The world does not need mere dilettantes who have neither the patience nor the stamina for the discipline which is necessary to the production of good work. The world needs able men who have such rounded personalities that they can express themselves in many fields with satisfaction to themselves and benefit to society generally. A Benjamin Franklin who is a printer, a writer, a scientist and a statesman; a Thomas Jefferson who is a farmer, a philosopher, a teacher, a statesman, a lawyer and a writer; ...these are worth more to the world than dozens of one-track-minded specialists and technicians.

The versatility of these great men proves that it is possible for men to be masters of many trades, provided they are masters of their own time.

As long as we are forced to solve our basic economic problem solely by the practice of our professions, we cannot afford to experiment and adventure in any field that happens to interest us. And what is even more important, we are not free to refuse to do work which does violence to our inclinations and our ideals.

To this extent we can free ourselves if only we organize our economic life so that earning the money for the material essentials of comfort ceases to be the major problem of our lives.⁹²

Peer production, with decentralized distribution of music and art over the internet, has already gone a long way toward restoring the folk model of culture and undermining the great media corporations of the twentieth century. The marketing approach of Phish and Radiohead is the wave of the future. S.M. Koppelman's analysis of the situation is far too astute to be buried in the comment thread of a blog post, which is where I found it:

Before the mid 19th century, when mass-market sheet music and piano roll sales created

⁹² Borsodi, *This Ugly Civilization*, pp. 363-63.

a "music industry" in which selling widgets and collecting royalties became sources of income, there was still plenty of music being made. People played fiddles and lutes and whistles and whatever around the kitchen table and the campfire. Some made money at playing in party bands. Traveling musicians and buskers could earn a modest income. Other professionals played in theaters and traveling shows, and still others earned money through composing pieces on commission.

The music industry as we've come to know it in the last century and a half is a fairly new development. Music isn't. It came into being because printing sheet music, producing piano rolls, and later, manufacturing cylinders and discs and tapes was expensive and required costly equipment. The only entities that could afford to do it were serious businesses, so the business models they created around copyright, publishing rights and manufacturing a physical product were viable. It was easy to use copyright to protect your interests because serious piracy required serious capital. Piracy that impacted the industry generally came from big operations run by organized crime. Cracking down was the relatively simple matter of raiding factories and warehouses and stopping big trucks full of bootlegs.

Now the "music industry" is unnecessary. Anyone can produce a flawless CD for about forty cents at home. Maintaining the industry in its current state is simply propping up an old cartel out of a misguided sense that it's the rightful gatekeeper to music distribution.

We're not rushing to ban or tax the hell out of digital cameras because Kodak and Polaroid are suffering. They haven't asked government to do so, and they'd be laughed out of town if they did.

The record industry is obsolete. It's time for all those people to find another line of work. Musicians will keep making music. They just won't have an easy time making money from selling recordings. We had music for thousands of years before Edison's wax cylinders, and the inevitable end of the music industry -- pay-per-track download sites included -- won't put a stop to it. It may signal an end to the top-down star system, though, and a return to local and personal musicmaking.⁹³

Cory Doctorow cites research on the effect of filesharing of music and movies, which has found that

it has a marginally negative effect on a negligible portion of works in the top 40 (in other words, it puts a small tax on blockbusters), no effect on works in the middle of the pile; and a positive effect on works in the "long tail" produced for niches. As Tim O'Reilly says, "Piracy is progressive taxation." If you're a content millionaire like Justin Timberlake or Steven Spielberg, it bites you a little. If you're in the middle class, it's a wash -- generating as many sales as it costs. If you're in the great majority where you are more endangered by obscurity than piracy, it gives you a lift.

But even if it turns out that P2P is the death knell for \$300 million movies and artists

⁹³ S. M. Koppelman comment under Nick Gillespie, "The Man Can Bust Our Music," *Reason Hit & Run*, January 5, 2004 <<http://www.reason.com/blog/show/103947.html>>.

who earn a living from recording, so what? Radio was bad news for Vaudeville, too. Today's recording artists can earn a living because radio and records killed the careers of many live performers. If bands have to be more like Phish to survive, that's how it goes. Particular copyright business models aren't written into the Constitution; technology giveth and technology taketh away.

P2P is enabling more filmmakers, more musicians, and more writers and other creators to produce a wider variety of works that please a wider audience than ever before.⁹⁴

Self-employment and workers' control of production give workers a sense of control over their lives. Sad to say, many self-professed libertarians refuse to recognize this as a positive social value. If maintenance of the wage relationship does not rely on direct or indirect coercion, they say, then libertarians should be neutral about its cultural and psychological effects.

Nonsense. Although libertarians should not advocate or use force to abolish injustices that do not result from coercion, they should oppose on moral grounds anything that promotes a culture of obedience or impedes the individual's sense of control over his own life. Charles Johnson argues that libertarians ought to oppose culturally authoritarian social relationships, even uncoercive ones, on what he calls "grounds thickness": we should find them repugnant to the basic values that drove us to libertarianism in the first place.

But while there's nothing logically inconsistent about a libertarian envisioning—or even championing—this sort of social order [based on deference and submission to authority, including from workers to bosses], it would certainly be *weird*. Noncoercive authoritarianism may be *consistent* with libertarian principles, but it is hard to *reasonably* reconcile the two. Whatever reasons you may have for rejecting the arrogant claims of power-hungry politicians and bureaucrats—say, for example, the Jeffersonian notion that all men and women are born equal in political authority and that no one has a natural right to rule or dominate other people's affairs—probably serve just as well for reasons to reject other kinds of authoritarian pretension, even if they are not expressed by means of coercive government action. While no one should be *forced* as a matter of policy to treat her fellows with the respect due to equals, or to cultivate independent thinking and contempt for the arrogance of power, libertarians certainly can—and should—*criticize* those who do not, and *exhort* our fellows not to rely on authoritarian social institutions, for much the same reasons that we have for endorsing libertarianism in the first place.⁹⁵

Even though, "under laissez faire, there is nothing politically illegitimate about the employment relation," Sheldon Richman raises the question

⁹⁴ Ernest Lilley, "Interview: Cory Doctorow," *SFRevu*, January 1, 2007 <<http://sfrevu.com/php/Review-id.php?id=4785>>.

⁹⁵ Charles Johnson, "Libertarianism Through Thick and Thin," *The Freeman: Ideas on Liberty*, July/August 2008, p. 37 <<http://www.fee.org/pdf/the-freeman/Johnson.pdf>>.

whether a libertarian can be comfortable being subject to someone's arbitrary will even through consent. Once in a job, withdrawal may not be feasible or easy, leaving the employee under a boss's thumb for an indefinite period. How can a libertarian put himself in that position? This leads me to believe that in an anarchist society, where all privilege has been abolished, people would look for alternatives to conventional employment.⁹⁶

Dan Clore, a member of the LeftLibertarian2 yahoogroup, replied as follows to a conventional "the consumer is king" defense of the free market:

If you want to promote the "free market", using a metaphor by which most people are in the position of a serf for eight hours each day probably isn't going to help your case. Even if they do get to go to the grocery store and play king once in a while.⁹⁷

No less a libertarian than Claire Wolfe has perceived this. Wolfe sees the "job culture" as something fundamentally at odds with libertarian values:

The Job Culture isn't just jobs, work, and business institutions. It's a comprehensive way of life in which millions of people place institutional paid employment at the center of their world.

"What do you do?" is immediately understood to mean, "What kind of paid employment do you have?"

In the Job Culture, family life, recreation, deep personal interests, and desires all must be structured around and subordinated to The Job.

Even things like how we eat (fast foods), how we spend our leisure time (TV, shopping) and how we save for a rainy day (investing in stocks and bonds) are dictated by a culture of job holding and corporate institutions.

Our conversations, our holidays, our dress, our choice of neighborhood, choice of vehicle, health-care options, and a thousand other things are all dictated by one central force: The Holy Job.

This is normal? No, *this* is whacko. This is not the way human beings evolved to live. This is a new and artificial lifestyle gradually imposed over the last couple of centuries – imposed for the sake of institutions, rather than individuals. We've gotten so used to it that we take it for granted. Then we wonder why we're so stressed, so plagued by low-level health complaints, and why the non-job parts of our life tend to suffer so much....

⁹⁶ Sheldon Richman comment under Kevin Carson, "The Ethics of Labor Struggle: A Free Market Perspective," *Mutualist Blog: Free Market Anti-Capitalism*, April 19, 2007
<<http://mutualist.blogspot.com/2007/04/media-print-projection-embossed-body.html>>.

⁹⁷ Dan Clore, "Re: Reclaiming Corn & Culture," *LeftLibertarian2*, July 21, 2008.
<<http://groups.yahoo.com/group/LeftLibertarian2/message/20726>>

The traditional case against jobs and the Job Culture comes from the left, which warns us of exploited workers, mindless consumerism, and environmental destruction. Meanwhile, the right cheers what it mistakenly calls free enterprise.

But if anybody should rail against the Job Culture and endeavor to bring it down, it should be libertarians, anarcho-capitalists, and true conservatives....

The daily act of surrendering individual sovereignty – the act of becoming a mere interchangeable cog in a machine – an act we have been *conditioned* to accept and to call a part of “capitalism” and “free enterprise” when it is not – is the key reason why the present Job Culture is a disaster for freedom.

James Madison, the father of the Bill of Rights, wrote:

“The class of citizens who provide at once their own food and their own raiment, may be viewed as the most truly independent and happy. They are more: They are the best basis of public liberty, and the strongest bulwark of public safety. It follows, that the greater the proportion of this class to the whole society, the more free, the more independent, and the more happy must be the society itself.”

Madison was speaking specifically about independent farmers, but he was also a believer in the independent entrepreneur – and for the same reasons.

Madison (and his like-minded friend Jefferson) knew that people who are self-sufficient in life's basics, who make their own decisions, whose livelihood relies on their own choices rather than someone else's, are less likely to march in lockstep. Independent enterprisers are far more likely to think for themselves, and far more capable of independent action than those whose first aim is to appease institutional gods.

Living in the Job Culture, on the other hand, has conditioned us to take a “someone else will deal with it” mentality. “I'm just doing my job.” “The boss makes the decisions.” “I'm just following orders.” But if someone else is responsible for all the important choices in life, then we by definition, are not.

An attitude and work-style of true free enterprise would leave millions spectacularly independent from both the juicy blandishments and the inhumane dictates of large corporate institutions (both governmental and private). It would leave millions free to say, “Screw you!” to institutional masters and “No thanks” to those who dangle tempting “benefits” in exchange for loss of personal autonomy. It would mean that more individuals dealt with each other on a more equal footing, with fewer corporate or political masters.

That's what both free enterprise and true freedom are all about.⁹⁸

⁹⁸ Claire Wolfe, "Insanity, the Job Culture, and Freedom," *Loompanics Unlimited* 2005 Winter Supplement <<http://www.loompanics.com/Articles/insanityjobculture.html>>.

In the republican ideology of the American Revolution and the first post-revolutionary generation, standing armies were feared as a threat to liberty. This was not merely because of the potential for a Caesar to cross the Rubicon or a Cromwell to purge the House of Commons. It was because the *internal culture* of a standing army--even a standing army made up entirely of voluntary enlistees--was a breeding ground for authoritarian values, for habits of obedience to command, that would carry over into civilian life and contaminate the larger political culture.

Anyone who doubts this should reflect on the effect that the mass conscription of two generations in two world wars, starting in 1917, had on American political culture. The defining cultural style of the so-called "Greatest Generation" was formed in reaction against the previously dominant style, florid and sentimental, of the Victorian and Edwardian eras. The new cultural style probably had its roots in the "lost generation" of Great War veterans and those coming to maturity afterward: close-cropped, clean-shaven, with a jaded wiseguy persona and the terse demeanor of Gary Cooper. This cultural style, which the Baby Boomers in turn reacted against forty years later, was the basis of the "hardhat" culture of the "silent majority." And one of its central identifying features was authoritarianism, summed up by the frequent jibe: "Put that filthy hippie in the army--it'll make a man out of him!"

The founding generation focused its fear and aversion on the standing army because, in the American society of the time, they were (with the exception of the Post Office, and perhaps the Episcopalian establishment in some areas) virtually the only large, hierarchical institution in existence.⁹⁹ There were no large, hierarchical employers in the private sector. Even so, their aversion to standing armies was paralleled, in fact, by an aversion to wage employment, for the same reason: the cultural habits of obedience to authority which it bred. For example Jefferson, in *Notes on Virginia*, warned that the growth of manufacturing would replace an ethos of self-sufficiency with one of dependence. "Dependence begets subservience and venality, suffocates the germ of virtue, and prepares fit tools for the designs of ambition." The predominance of manufacturing based on wage labor would subvert "the manners and spirit of a people which preserve a republic in vigor," and promote a "degeneracy" in them which would undermine the basis of liberty.¹⁰⁰

The culture of authority and obedience associated with wage labor carries over into the rest of life because the human personality cannot be compartmentalized.

⁹⁹ Interestingly, according to Alfred Chandler, the techniques of managing a multi-unit corporation were first worked out in the railroads by salaried administrators from a military engineering background. Mechanical engineering was an outgrowth of, and heavily influenced in its development by, military engineering; the influence of mechanical engineering on the science of corporate management, in turn, we saw in Chapter Four.

¹⁰⁰ Winner, *The Whale and the Reactor*, p. 43.

The split between life and work is probably the greatest contemporary social problem. You cannot expect men to take a responsible attitude and to display initiative in daily life when their whole working experience deprives them of the chance of initiative and responsibility. The personality cannot be successfully divided into watertight compartments...: if a man is taught to rely upon a paternalistic authority within the factory, he will be ready to rely upon one outside. If he is rendered irresponsible at work by lack of opportunity for responsibility, he will be irresponsible when away from work too.¹⁰¹

The converse is also true. L. S. Stavrianos quotes Neil McWhinney, an academic psychologist who served as consultant to a Proctor & Gamble experiment in worker self-management:

One of the striking features in our "pure" open systems plant is that workers have taken on more activities outside the workplace. The most visible involvements had to do with community racial troubles. Following major disturbances in the small city where they lived, a number of workers organized the black community to deal directly with the leaders of the city and of industry.... Blue collar workers won elections to the school board majority office and other local positions. Nearly ten percent of the work force of our plant holds elective offices currently.... We have noted that open systems workers join more social clubs and political organizations.¹⁰²

This is especially impressive, I might add, because (as we saw in Chapter Four) so many local government "reforms" of the so-called Progressive Era reflected the New Class's desire to "professionalize" government in response to just such "excessive" levels of blue collar representation. At-large representation, large wards, citywide school boards, all were created--despite the obligatory goo-goo "public welfare" and "good government" rhetoric--for the primary purpose of keeping the riff-raff out.

Empowered workers, whether self-employed or equal partners in self-management, tend to play an assertive role in their communities, strengthening the control of ordinary people over all the decisions that affect their lives. They become, to put it bluntly, less prone to take shit off of anybody. Peter Block writes:

"If day in and day out we go to a workplace that breeds helplessness and compliance, this becomes our generalized pattern of response to the larger questions of our society and our lives", and democracy will flounder.¹⁰³

E. Peer Production

¹⁰¹ Gordon Rattray Taylor, *Are Workers Human?*, quoted in Colin Ward, *Anarchy in Action* (London: Freedom Press, 1982), p. 95.

¹⁰² Stavrianos, *The Promise of the Coming Dark Age*, p. 63.

¹⁰³ Quoted in Dave Pollard, "Stewardship: Remaking Traditional Companies into Natural Enterprises," *How to Save the World*, July 3, 2006 <<http://blogs.salon.com/0002007/2006/07/03.html#a1577>>.

Lewis Mumford, in *The City in History*, discussed the closer connection between science and invention, in a way that prefigured more recent discussions of peer-to-peer culture. According to Mumford, in the neotechnic phase the possibilities for invention are suggested by, and follow directly from, the general level of scientific knowledge-- which itself is the product of an egalitarian international community. So, although the actual coinage of the term "peer-to-peer" awaited the cyberculture, Mumford anticipated technical innovation as a decentralized process.

Peer production first emerged in information industries: software, entertainment, etc. As Johan Soderberg argues,

[t]he universally applicable computer run on free software and connected to an open network... have [sic] in some respects levelled the playing field. Through the global communication network, hackers are matching the coordinating and logistic capabilities of state and capital.¹⁰⁴

As is the case with cooperatives, peer networks are more productive than the capitalist competition because of the agency and motivational benefits of self-employment. Soderberg quotes Linus Torvalds' comment that proprietary software systems are bad "because the people don't care," and adds

To a hired programmer, the code he is writing is a means to get a pay check at the end of the month. Any shortcut when getting to the end of the month will do. For a hacker, on the other hand, writing code is an end in itself. He will always pay full attention to his endeavour, or else he will be doing something else.¹⁰⁵

As we saw from the Microsoft "Halloween Document" quoted in the "intellectual property" section of Chapter Three, Bill Gates saw the free and open-source software movement as a subversive threat to profits on proprietary software.

Peer production's transferability to the world of physical production is also a matter of great interest. Open source hardware refers, at the most basic level, to the development and improvement of designs for physical goods on an open-source basis, with no particular mode of physical production being specified. In Stallman's terms, open source hardware means the design is free as in free speech, not free beer. Although the manufacturer is not hindered by patents on the design, he must still bear the costs of physical production. As Edy Ferreira described it,

¹⁰⁴ Johan Soderberg, *Hacking Capitalism: The Free and Open Source Software Movement* (New York and London: Routledge, 2008), p. 2.

¹⁰⁵ Soderberg, p. 26. Soderberg also quotes Marx, from *Grundrisse*: "In fact, of course, this 'productive' worker cares about as much for the crappy shit he has to make as does the capitalist himself who employed him, and who also couldn't give a damn for the junk." *Ibid.*, p. 197n.

any piece of hardware whose manufacturing information is distributed using a license that provides specific rights to users without the need to pay royalties to the original developers. These rights include freedom to use the hardware for any purpose, freedom to study and modify the design, and freedom to redistribute copies of either the original or modified manufacturing information.

This definition fits what McNamara calls "Open Implementation" hardware, described as "hardware for which the complete bill of materials necessary to construct the device is available."

In the case of open source software (OSS), the information that is shared is software code. In OSH, what is shared is hardware manufacturing information, such as hardware definition language descriptions, and the diagrams and schematics that describe a piece of hardware.¹⁰⁶

At the simplest level, a peer network may design a product and make it publicly available on an open-source basis; it may be subsequently built by any and all individuals or groups who have the necessary production machinery, without coordinating their efforts with the original designer(s). For example, Vinay Gupta has proposed a large-scale library of open-source hardware designs as an aid to international development:

An open library of designs for refrigerators, lighting, heating, cooling, motors, and other systems will encourage manufacturers, particularly in the developing world, to leapfrog directly to the most sustainable technologies, which are much cheaper in the long run. Manufacturers will be encouraged to use the efficient designs because they are free, while inefficient designs still have to be paid for. The library could also include green chemistry and biological solutions to industry challenges, for example enzymatic reactions that could be used in place of energy, and chemical-intensive processes or nontoxic paint pigments for cars and buildings. This library should be free of all intellectual property restrictions and open for use by any manufacturer, in any nation, without charge.¹⁰⁷

One item of his own design, the Hexayurt, is

a refugee shelter system that uses an approach based on "autonomous building" to provide not just a shelter, but a comprehensive family support unit which includes drinking water

¹⁰⁶ "Open Source Hardware," P2P Foundation Wiki
<http://www.p2pfoundation.net/Open_Source_Hardware>.

¹⁰⁷ Vinay Gupta, "Facilitating International Development Through Free/Open Source,"
<http://guptaoption.com/5.open_source_development.php> Quoted from Beatrice Anarow, Catherine Greener, Vinay Gupta, Michael Kinsley, Joanie Henderson, Chris Page and Kate Parrot, Rocky Mountain Institute, "Whole-Systems Framework for Sustainable Consumption and Production." Environmental Project No. 807 (Danish Environmental Protection Agency, Ministry of the Environment, 2003), p. 24.
<<http://files.howtolivewiki.com/A%20Whole%20Systems%20Framework%20for%20Sustainable%20Production%20and%20Consumption.pdf>>

purification, composting toilets, fuel-efficient stoves and solar electric lighting."¹⁰⁸

The basic construction materials for the floor, walls and roof cost about \$200.¹⁰⁹

One of the most ambitious attempts at such an open design project for village development is Open Source Ecology, with their experimental facility Factor E Farm.

We are actively involved in demonstrating the world's first replicable, post-industrial village. We take the word *replicable* very seriously - we do not mean a top-down funded showcase - but one that is based on ICT, open design, and digital fabrication - in harmony with its natural life support systems. As such, this community is designed to be self-reliant, highly productive, and sufficiently transparent so that it can truly be replicated in many contexts - whether it's parts of the package or the whole. Our next frontier will be education to train Village Builders - just as we're learning how to do it from the ground up.¹¹⁰

Here's a list of the design categories and individual projects being developed by OSE, from their Wiki:

HABITAT PACKAGE: CEB Press - Sawmill - Living Machines - Modular Housing Units - Modular Greenhouse Units - Solar Turbine CHP System - AGRICULTURE PACKAGE: Modular Greenhouse Units - Orchard and Nursery - Electric Garden Tractor - Organoponic Raised Bed Gardening - Agricultural Microcombine -Bakery -Dairy - Energy Food Bars - Agricultural Spader - Well Drilling Rig - Freeze Dried Fruit Powders - Hammer Mill - ENERGY PACKAGE: Solar Turbine CHP System - Compressed Fuel Gas - Inverters & Grid Intertie - Electric Motors/Generators - Fuel Alcohol - FLEXIBLE INDUSTRY PACKAGE: Multimachine & Flex Fab - Metal Casting and Extrusion - Plastic Extrusion & Molding - TRANSPORTATION: Open Source Car - Electric Motors/Generators - Electric Motor Controls - MATERIALS: Aluminum Extraction From Clays - Bioplastics¹¹¹

One project that's reached the prototype stage, the Compressed Earth Block press, can be built for \$5000--some 20% of the price of the cheapest commercial competitor.¹¹²

Another project in development is the solar turbine, which uses the sun's heat to power a steam-driven generator, as an alternative to photovoltaic electricity.¹¹³

Karim Lakhani describes this general phenomenon, the separation of open-source design from an independent production stage, as "communities driving manufacturers out of the design space":

¹⁰⁸ <<http://www.p2pfoundation.net/Hexayurt>>

¹⁰⁹ <<http://hexayurt.com/>>

¹¹⁰ "Clarifying OSE Vision," *Factor E Farm Weblog*, September 8, 2008 <<http://openfarmtech.org/weblog/?p=325>>.

¹¹¹ Main Page, Open Source Ecology <http://openfarmtech.org/index.php?title=Main_Page>

¹¹² "CEB Phase 1 Done," *Factor E Farm Weblog*, December 26, 2007 <<http://openfarmtech.org/weblog/?p=91>>.

¹¹³ "Solar Turbine--Open Source Ecology" <http://openfarmtech.org/index.php?title=Solar_Turbine>

The rise of open source software is a clear example of users innovating and developing products that can out compete traditional manufacturers. But this effect is not just limited to software. In physical products ranging from snowboards to electronic microscopes, users have been shown to be the dominant source of functionally novel innovations. Communities can supercharge this innovation mechanism. And may ultimately force companies out of the product design space. Just think about it - for any given company - there are more people outside the company that have smarts about a particular technology or a particular use situation than all the R&D engineers combined. So a community around a product category may have more smart people working on the product than the firm it self. So in the end manufacturers may end up doing what they are supposed to - manufacture - and the design activity might move to the edge and into the community.¹¹⁴

Michel Bauwens, of the P2P foundation, provides a small list of some of the more prominent open-design projects:

The Grid Beam Building System, at
http://www.p2pfoundation.net/Grid_Beam_Building_System
The Hexayurt, at <http://www.p2pfoundation.net/Hexayurt>
Movisi Open Design Furniture, at
http://www.p2pfoundation.net/Movisi_Open_Design_Furniture
Open Cores, at http://www.p2pfoundation.net/Open_Cores and other Open Computing Hardware, at http://www.p2pfoundation.net/Open_Hardware
Open Source Green Vehicle, at
http://www.p2pfoundation.net/Open_Source_Green_Vehicle
Open Source Scooter http://www.p2pfoundation.net/Open_Source_Scooter
The Ronja Wireless Device at
http://www.p2pfoundation.net/Twibright_Ronja_Open_Wireless_Networking_Device
Open Source Sewing patterns, at
http://www.p2pfoundation.net/Open_Source_Sewing_Patterns
Velomobiles
http://www.p2pfoundation.net/Open_Source_Velomobile_Development_Project
Open Energy http://www.p2pfoundation.net/SHPEGS_Open_Energy_Project¹¹⁵

A more complex scenario involves the coordination of an open source design stage with the production process within a large peer organization, with the separate stages of physical production distributed and coordinated by the same peer network that created the design. Dave Pollard provides one example:

¹¹⁴ Karim Lakhana, "Communities Driving Manufacturers Out of the Design Space," *The Future of Communities Blog*, March 25, 2007 <<http://www.futureofcommunities.com/2007/03/25/communities-driving-manufacturers-out-of-the-design-space/>>.

¹¹⁵ Michel Bauwens, "What kind of economy are we moving to? 3. A hierarchy of engagement between companies and communities," *P2P Foundation Blog*, October 5, 2007 <<http://blog.p2pfoundation.net/what-kind-of-economy-are-we-moving-to-3-a-hierarchy-of-engagement-between-companies-and-communities/2007/10/05>>.

Suppose I want a chair that has the attributes of an Aeron without the \$1800 price tag, or one with some additional attribute (e.g. a laptop holder) the brand name doesn't offer? I could go online to a Peer Production site and create an instant market, contributing the specifications, a bunch of technical links available online about just what makes this chair so special, and, perhaps a maximum price I would be willing to pay. People with some of the expertise needed to produce it could indicate their capabilities and self-organize into a consortium that would keep talking and refining until they could meet this price -- and, if not, they might counter-offer something close. Other potential buyers could chime in, offering more or less than my suggested price. Based on the number of 'orders' at each price, the Peer Production group could then accept orders and start manufacturing....

As [Erick] Schonfeld suggests, the intellectual capital associated with this instant market becomes part of the market archive, available for everyone to see, stripping this intellectual capital cost, and the executive salaries, dividends and corporate overhead out of the cost of this and other similar product requests and fulfillments, so that all that is left is the lowest possible cost of material, labour and delivery to fill the order. And the order is exactly what the customer wants, not the closest thing in the mass-producer's warehouse.¹¹⁶

The most ambitious example of an open-source physical production project is the open source car.

Can open-source practices and approaches be applied to make hardware, to create tangible and physical objects, including complex ones? Say, to build a car?...

Markus Merz believes they can. The young German is the founder and "maintainer" (that's the title on his business card) of the OScar project, whose goal is to develop and build a car according to open-source (OS) principles. Merz and his team aren't going for a super-accessorized SUV—they're aiming at designing a simple and functionally smart car. And, possibly, along the way, reinvent transportation.¹¹⁷

Well, actually there's an open-source project even more ambitious than the open-source car, but it's fictional: the open-source moon project, a volunteer effort of a peer network of thousands, in Craig DeLancy's "Openshot." The project's ship (the *Stallman*), built largely with Russian space agency surplus, beats a corporate-funded proprietary project to the moon.¹¹⁸

A slightly less ambitious open-source manufacturing project, and probably more relevant to the needs of most people in the world, is Open Source Ecology's open-source

¹¹⁶ Dave Pollard, "Peer Production," *How to Save the World*, October 28, 2005 <<http://blogs.salon.com/0002007/2005/10/28.html#a1322>>.

¹¹⁷ Bruno Giussani, "Open Source at 90 MPH," *Business Week*, December 8, 2006 <http://www.businessweek.com/innovate/content/dec2006/id20061208_509041.htm?>. See also the OS Car website, <<http://www.theoscarproject.org/>>

¹¹⁸ Craig DeLancey, "Openshot," *Analog*, December 2006, pp. 64-74.

tractor (LifeTrac). It's designed for inexpensive manufacture, with modularity and easy disassembly, for lifetime service and low cost repair. It includes, among other things, a well-drilling module, and is also designed to serve as a prime mover for the Compressed Earth Block machine, a saw mill, and other machinery.¹¹⁹

In either case, whether physical production is coordinated with the design stage or organized independently, it may take place in comparatively heavily capitalized factories (likely owned by workers' cooperatives in a post-capitalist society), by outsourcing the production of specific parts to more modestly capitalized small shops, or to even cheaper emerging small-scale production facilities like the multimachine, or to a combination of some or all of the above.

Clearly, as we saw in Chapter Fourteen, the emergence of cheap desktop technology for custom machining parts in small batches will greatly lower the overall capital outlays needed for networked physical production of light and medium consumer goods.

The availability of modestly priced desktop manufacturing technology (coupled with the promise of LETS systems, mutual banks, and other forms of alternative credit) has led to a considerable shift in opinion in the peer-to-peer community, as evidenced by Michel Bauwens:

I used to think that the model of peer production would essentially emerge in the immaterial sphere, and in those cases where the design phase could be split from the capital-intensive physical production sphere. Von Hippel's work is very convincing in showing how widespread the model of built-only capitalism already is.

However, as I become more familiar with the advances in Rapid Manufacturing (see http://www.p2pfoundation.net/Rapid_Manufacturing) and Desktop Manufacturing (see http://www.p2pfoundation.net/Desktop_Manufacturing), I'm becoming increasingly convinced of the strong trend towards the distribution of physical capital.

If we couple this with the trend towards the direct social production of money (i.e. the distribution of financial capital, see http://www.p2pfoundation.net/P2P_Exchange_Infrastructure_Projects) and the distribution of energy (http://www.p2pfoundation.net/P2P_Energy_Grid); and how the two latter trends are interrelated (see <http://blog.p2pfoundation.net/combining-distributed-energy-with-distributed-money/2007/05/06>), then I believe we have very strong grounds to see a strong expansion of p2p-based modalities in the physical sphere. See also Kevin Carson's book manuscript about trends in decentralized production technology (<http://mutualist.blogspot.com/>)¹²⁰

¹¹⁹ "LifeTrac," Open Source Ecology wiki <<http://openfarmtech.org/index.php?title=LifeTrac>>.

¹²⁰ Michel Bauwens post to Institute for Distributed Creativity email list, May 7, 2007. <<https://lists.thing.net/pipermail/idc/2007-May/002479.html>>

Kevin Kelly argues that the actual costs of physical production are only a minor part of the cost of manufactured goods.

...material industries are finding that the costs of duplication near zero, so they too will behave like digital copies. Maps just crossed that threshold. Genetics is about to. Gadgets and small appliances (like cell phones) are sliding that way. Pharmaceuticals are already there, but they don't want anyone to know. It costs nothing to make a pill.¹²¹

This is essentially a restatement, from a less gushy point of view, of Tom Peter's observation that the bulk of product price is "ephemera" or "intellect," rather than nuts and bolts and labor. Or as I put it in Chapters Ten and Eleven, much less nicely, most of the price of manufactured goods is embedded rent on artificial property rights like "intellectual property." When physical manufacturing is stripped of the cost of proprietary design and technology, and the consumer-driven, pull model of distribution strips away most of the immense marketing cost, we will find that the portion of price formerly made up of such intangibles will implode, and the remaining price based on actual production cost will be an order of magnitude lower. In a world where commodity price consists entirely of labor and material costs, without rents to useless eaters with grants of privilege from the state, we can likely maintain the existing standard of living with an average work week of one or two days. The other three or four days of work, as I argued in Chapter Twelve, go to fixing Bastiat's broken windows, digging holes and filling them back in, and supporting idle rentiers.

In any case, there is a common thread running through all the different theories of the interface between peer production and the material world: as technology for physical production becomes feasible on increasingly smaller scales and at less cost, or the lower the transaction costs of aggregating small units of capital into large ones, the less disconnect there will be between peer production and physical production.

- P2P can arise not only in the immaterial sphere of intellectual and software production, but wherever there is access to distributed technology: spare computing cycles, distributed telecommunications and any kind of viral communicator meshwork.
- P2P can arise wherever other forms of distributed fixed capital is available: such is the case for carpooling, which is the second mode of transportation in the U.S.....
- P2P can arise wherever financial capital can be distributed. Initiatives such as the ZOPA bank point in that direction. Cooperative purchase and use of large capital goods are a possibility....¹²²

Franz Nahrada writes in the same vein, affirming Bauwens' distinction between cooperatives and peer production, but nevertheless arguing that

¹²¹ Kevin Kelly, "Better Than Free," *The Technium*, January 31, 2008
<http://www.kk.org/thetechnium/archives/2008/01/better_than_fre.php>.

¹²² Michel Bauwens, "The Political Economy of Peer Production," *CTheory*, December 2005
<<http://www.ctheory.net/articles.aspx?id=499>>.

at the same time it is imagineable that cooperatives work out arrangements that lead to a circulation of material goods and therefore enable mutual supply in a circular process, to some degree eliminating the need for monetary income. This economy would work in a biomorphical way, the surplus on one point being the input on others....

Once we really get a grasp of really efficient home production, the rules of the games will change drastically. In this respect I share Stefan Mertens optimism, although I hate to bring it all down to the notion or image of the fabber. There are very interesting intermediate schemes which work at community level - technologically possible, but neglected from the point of view of capitalist production.¹²³

In effect, the distinction between Stallman's "free speech" and "free beer" is eroding. To the extent that embedded rents on "intellectual property" are a significant portion of commodity prices, "free speech" (in the sense of the free use of ideas) will make our "beer" (i.e., the price of manufactured commodities) at least a lot cheaper.

Although leading figures in the proprietary software (and proprietary everything) movement are fond of using alarmist language about peer producers--for example, Bill Gates' reference to the open-source movement as "communists"--peer production is in fact a case of "back to the future." It's a return to the kind of self-employment and small-scale production for consumption or local exchange that predated the Industrial Revolution and the corporate transformation of capitalism, but this time producing the kinds of high-quality manufactured outputs previously monopolized by large-scale industry. As "Jed," at *Anomalous Presumptions* blog, describes it, peer production makes it possible to produce without access to large amounts of capital:

The problem for capitalists in peer production is that typically there is no way to get a return on ownership. Linus Torvalds doesn't own the Linux source code, Jimmy Wales doesn't own the text of Wikipedia, etc. These are not just incidental facts, they are at the core of the social phenomenon of peer production. A capitalist may benefit indirectly, for a while, from peer production, but the whole trend of the process is against returns on ownership per se....

Historically, entrepreneurship is associated with creating a profitable enterprise....

The classical idea of profit is monetary and is closely associated with the rate of (monetary) return on assets....

The peer production equivalent of profit is creating a self-sustaining social entity that delivers value to participants. Typically the means are the same as those used by any

¹²³ Michel Bauwens, "Franz Nahrada: Can we produce for physical abundance or sufficiency?" *P2P Foundation Blog*, January 14, 2008 <<http://blog.p2pfoundation.net/franz-nahrada-can-we-produce-for-physical-abundance-or-sufficiency/2008/01/14>>.

classical entrepreneur: creating a product, publicizing the product, recruiting contributors, acquiring resources, generating support from larger organizations (legal, political, and sometimes financial), etc.

Before widespread peer production, the entrepreneur's and capitalist's definitions of success were typically congruent, because growing a business required capital, and gaining access to capital required providing a competitive return. So classical profit was usually required to build a self-sustaining business entity.

The change that enables widespread peer production is that today, an entity can become self-sustaining, and even grow explosively, with very small amounts of capital. As a result it doesn't need to trade ownership for capital, and so it doesn't need to provide any return on investment.¹²⁴

But beyond that, Charles Johnson points out, because of the new possibilities the Internet provides for lowering the transaction costs entailed in networked mobilization of capital, peer production can take place even when significant capital investments are required--without relying on finance by large-scale sources of venture capital:

it's not just a matter of projects being able to expand or sustain themselves with little capital (although that is a factor). It's also a matter of the way in which both emerging distributed technologies in general, and peer production projects in particular, facilitate *the aggregation of dispersed capital* — without it having to pass through a single capitalist chokepoint, like a commercial bank or a venture capital fund. Because of the way that peer production projects distribute and amortize their costs of operation, entrepreneurs can afford to bypass existing financial operators and go directly to people with \$20 or \$50 to give away and take the money in in small donations, because they no longer need to get multimillion dollar cash infusions all at once just to keep themselves running: the peer production model allows greater flexibility by dispersing fixed costs among many peers (and allowing new entrepreneurs to easily step in and take over the project, if one has to bow out due to the pressures imposed by fixed costs), rather than by concentrating them into the bottom line of a single, precarious legal entity. Meanwhile, because of the way that peer production projects distribute their labor, peer-production entrepreneurs can also take advantage of spare cycles on existing, widely-distributed capital goods — tools like computers, facilities like offices and houses, software, etc. which contributors own, which they still would have owned personally or professionally whether or not they were contributing to the peer production project, and which can be put to use as a direct contribution of a small amount of fractional shares of capital goods directly to the peer production project. So it's not just a matter of cutting total aggregate costs for capital goods (although that's an important element); it's also, importantly, a matter of new models of *aggregating the capital goods* to meet whatever costs you may have, so that small bits of available capital can be rounded up without the intervention of money-men and other intermediaries.¹²⁵

¹²⁴ Jed, "Capitalists vs. Entrepreneurs," *Anomalous Presumptions*, February 26, 2007
<<http://jed.jive.com/?p=23>>.

¹²⁵ Charles Johnson, "Dump the rentiers off your back," *Rad Geek People's Daily*, May 29, 2008
<http://radgeek.com/gt/2008/05/29/dump_the/>.

In making productive use of idle capital assets the average person owns anyway, providing a productive outlet for the surplus labor of the unemployed, and transforming the small surpluses of household production into a ready source of exchange value, the informal economy has as the cornerstone of its temple the stone which the builders rejected.

As we saw in Chapter Four, one of the ways that so-called "health" and "safety" codes, and occupational licensing, enforce radical monopoly and create barriers to cheap and comfortable subsistence, is by preventing people from using idle capacity (or "spare cycles") of what they already own anyway, and thereby transforming them into capital goods for productive use.

Consider, for example, the process of running a small, informal brew pub or restaurant out of your home, under a genuine free market regime. Buying a brewing vat and a few small fermenters for your basement, using a few tables in an extra room as a public restaurant area, etc., would maybe require a small bank loan for at most a few thousand dollars. And with that capital outlay, you could probably make payments on the debt with the margin from one customer a day. A few customers evenings and weekends, most of whom probably could be found mainly among your existing circle of acquaintances, would enable you to initially shift some of your working hours from wage labor to work in the restaurant, with the possibility of gradually phasing out wage labor altogether or scaling back to part time, as you built up a small customer base. In this and many other lines of business (for example a part-time gypsy cab service using a car you own anyway), the minimal entry costs and capital outlay mean that the minimum level of custom required to stay in business would be quite modest, and even a low level of turnover would be sufficient to pay the overhead. In that case, a lot more people would be able to start small businesses for supplementary income and just scale back their wage labor a bit, maybe gradually shift to complete self employment, all with minimal risk or sunk costs.

But that's illegal. You have to buy an extremely expensive liquor license, as well as having an industrial size and strength stove, dishwasher, etc. And that level of capital outlay can only be paid off with a large dining room and a large kitchen-waiting staff, which means you have to keep the place filled or the overhead costs will eat you alive—IOW, Chapter Eleven. These high entry costs and the enormous overhead are the reason you can't afford to start out really small and cheap, and the reason restaurants have such a high failure rate. It's illegal to use the surplus capacity of the ordinary household items we have to own anyway but remain idle most of the time. RFID chip requirements and bans on unpasteurized milk make it illegal to trade the small surpluses generated by ordinary household subsistence production. High fees for organic certification make it prohibitive to sell a few hundred dollars worth of surplus organic produce at a temporary roadside stand. You can't do just a few hundred or a few thousand dollars worth of business a year, because the state mandates capital equipment on the scale required for a

large-scale business if you engage in the business at all.

So it's employers, as well as big competitors, who have a vested interest in keeping these entry costs so high. It's a way of erecting an enormous toll gate between you and the possibility of self-employment, without a boss cracking the whip over you.

The social economy enables its participants to evade tribute in another way, as described by Scott Burns in *The Household Economy*. The most enthusiastic celebrations of increased efficiencies from division of labor--like those at Mises.Org--tend to rely on illustrations in which, as Burns puts it, "labor can be directly purchased," or be made the object of direct exchange between the laborers themselves. But in fact,

[m]arketplace labor must not only bear the institutional burden of taxation, it must also carry the overhead costs of organization and the cost of distribution. Even the most direct service organizations charge two and one-half the cost of labor. The accountant who is paid ten dollars an hour is billed out to clients at twenty-five dollars an hour.... When both the general and the specific overhead burdens are considered, it becomes clear that any productivity that accrues to specialization is vitiated by the overhead burdens it must carry.

Consider, for example, what happens when an eight-dollar-an-hour accountant hires an eight-dollar-an-hour service repairman, and vice versa. The repairman is billed out by his company at two and one-half times his hourly wage, or twenty dollars; to earn this money, the accountant must work three hours and twenty minutes, because 25 per cent of his wages are absorbed by taxes. Thus, to be truly economically efficient, the service repairman must be at least three and one-third times as efficient as the accountant at repairing things.¹²⁶

In other words, in the household and informal economy actually the division of labor is actually free to operate the way the right-wing libertarian hype says it should, without the overhead costs entailed in organizing the division of labor through corporate hierarchy and the wage system. In addition, the two kinds of tribute above interact synergistically: the main function of the regulatory and licensing cartels is to impose a high-overhead business model on what would otherwise be far more competitive operations. The privileged beneficiaries of the licensing system, obviously, don't *want* ordinary people to be able to deal directly with one another at sixty percent less cost.

Networked peer production dovetails both with Jane Jacobs' model of the Japanese bicycle factory, and with Kirkpatrick Sale's community repair, recycling, and remanufacturing shops, which we discussed in Chapter Fourteen. Along the same lines, Paul Goodman suggests

the pooling of equipment in a neighborhood group. Suppose that each member of the group

¹²⁶ Scott Burns, *The Household Economy: Its Shape, Origins, & Future* (Boston: The Beacon Press, 1975), pp. 163-164.

had a powerful and robust basic tool, while the group as a whole had, for example, a bench drill, lathes and a saw bench to relieve the members from the attempt to cope with work which required these machines with inadequate tools of their own, or wasted their resources on under-used individually-owned plant. This in turn demands some kind of building to house the machinery: the Community Workshop.

But is the Community Workshop idea nothing more than an aspect of the leisure industry, a compensation for the tedium of work?¹²⁷

Ward suggests, rather, that the Community Workshop will bridge the growing gap between the worlds of work and leisure.

The paradoxes of contemporary capitalism mean that there are vast numbers of what one American economist calls *no-people*: the army of the unemployed who are either unwanted by, or who consciously reject, the meaningless mechanical slavery of contemporary industrial production. Could they make a livelihood for themselves today in the community workshop? If the workshop is conceived merely as a social service for 'creative leisure' the answer is that it would probably be against the rules.... But if the workshop were conceived on more imaginative lines than any existing venture of this kind, its potentialities could become a source of livelihood in the truest sense. In several of the New Towns in Britain, for example, it has been found necessary and desirable to build groups of small workshops for individuals and small businesses engaged in such work as repairing electrical equipment or car bodies, woodworking and the manufacture of small components. The Community Workshop would be enhanced by its cluster of separate workplaces for 'gainful' work. Couldn't the workshop become the community *factory*, providing work or a place for work for anyone in the locality who wanted to work that way, not as an optional extra to the economy of the affluent society which rejects an increasing proportion of its members, but as one of the prerequisites of the worker-controlled economy of the future?

Keith Paton..., in a far-sighted pamphlet addressed to members of the Claimants' Union, urged them not to compete for meaningless jobs in the economy which has thrown them out as redundant, but to use their skills to serve their own community. (One of the characteristics of the affluent world is that it denies its poor the opportunity to feed, clothe, or house *themselves*, or to meet their own and their families' needs, except from grudgingly doled-out welfare payments). He explains that:

When we talk of 'doing our own thing' we are not advocating going back to doing everything by hand. This would have been the only option in the thirties. But since then electrical power and 'affluence' have brought a spread of intermediate machines, some of them very sophisticated, to ordinary working class communities. Even if they do not own them (as many claimants do not) the possibility exists of borrowing them from neighbours, relatives, ex-workmates. Knitting and sewing machines, power tools and other do-it-yourself equipment comes in this category. Garages can be converted into little workshops, home-brew kits are popular, parts and machinery can be taken from old cars and other gadgets. If

¹²⁷ Ward, *Anarchy in Action*, p. 94.

they saw their opportunity, trained metallurgists and mechanics could get into advanced scrap technology, recycling the metal wastes of the consumer society for things which could be used again regardless of whether they would fetch anything in a shop. Many hobby enthusiasts could begin to see their interests in a new light.

'We do,' he affirms, 'need each other and the enormous pool of energy and morale that lies untapped in every ghetto, city district and estate.'¹²⁸

Karl Hess also discussed community workshops--or as he called them, "shared machine shops"--in *Community Technology*.

The machine shop should have enough basic tools, both hand and power, to make the building of demonstration models or test facilities a practical and everyday activity.... [T]he shop might be... stocked with cast-off industrial tools, with tools bought from government surplus through the local school system... Work can, of course, be done as well in home shops or in commercial shops of people who like the community technology approach....

Thinking of such a shared workshop in an inner city, you can think of its use... for the maintenance of appliances and other household goods whose replacement might represent a real economic burden in the neighborhood....

...[T]here might be similar projects that the machine shop could undertake beyond the building of demonstration models and other regular community technology tasks. The machine shop could regularly redesign cast-off items into useful ones. Discarded refrigerators, for instance, suggest an infinity of new uses, from fish tanks, after removing doors, to numerous small parts as each discarded one is stripped for its components, which include small compressors, copper tubing, heat transfer arrays, and so on. The same goes for washing machines....

This idea has appeared in the San Francisco Bay area, in a commercial form, as TechShop:¹²⁹

TechShop is a 15,000 square-foot membership-based workshop that provides members with access to tools and equipment, instruction, and a creative and supportive community of like-minded people so you can build the things you have always wanted to make....

TechShop provides you with access to a wide variety of machinery and tools, including milling machines and lathes, welding stations and a CNC plasma cutter, sheet metal working equipment, drill presses and band saws, industrial sewing machines, hand tools, plastic and wood working equipment including a 4' x 8' ShopBot CNC router, electronics design and fabrication facilities, Epilog laser cutters, tubing and metal bending machines, a Dimension SST 3-D printer, electrical supplies and tools, and pretty much everything you'd ever need to

¹²⁸ Keith Paton, *The Right to Work or the Fight to Live?* (Stoke-on-Trent, 1972), in Ward, *Anarchy in Action*, pp. 108-109.

¹²⁹ <<http://techshop.ws/>>.

make just about anything.

Karl Hess linked his idea for a shared machine shop to another idea, "[s]imilar in spirit," the shared warehouse:

Everyone knows the agony of having to throw something away even though instinct says that someday it will be needed....

A community decision to share a space in which discarded materials can be stored, categorized, and made easily available is a decision to use an otherwise wasted resource....

The shared warehouse... should collect a trove of bits and pieces of building materials.... There always seems to be a bundle of wood at the end of any project that is too good to burn, too junky to sell, and too insignificant to store. Put a lot of those bundles together and the picture changes to more and more practical possibilities of building materials for the public space.

Spare parts are fair game for the community warehouse. Thus it can serve as a parts cabinet for the community technology experimenter....

A problem common to many communities is the plight of more resources leaving than coming back in.... The shared work space and the shared warehouse space involve a community in taking a first look at this problem at a homely and nonideological level.¹³⁰

This last is reminiscent of Jane Jacobs' observations on the development of local, diversified economies through the discovery of creative uses for locally generated waste and byproducts, and the use of such innovative technologies to replace imports.

E. F. Schumacher recounted his experiences with the Scott Bader Commonwealth, encouraging (often successfully) the worker-owners to undertake such ventures as a community auto repair shop, communally owned tools and other support for household gardening, a community woodworking shop for building and repairing furniture, and so forth. The effect of such measures was to take off some of the pressure to earn wages, so that workers might scale back their work hours.¹³¹

Another proposal for decentralizing manufacturing, first to the community and then to the household, is Nathan Cravens' Mutually Assured Production:

Phase 1. Regional Production. Manufacture general store goods at regional distribution centers every few hundred square miles for local outlet distribution. This approach could be

¹³⁰ Karl Hess, *Community Technology* (New York, Cambridge, Hagerstown, Philadelphia, San Francisco, London, Mexico City, Sao Paulo, Sydney: Harper & Row, Publishers, 1979), pp. 96-98.

¹³¹ E. F. Schumacher, *Good Work* (New York, Hagerstown, San Francisco, London: Harper & Row, 1979), pp. 80-83.

considered the mainframe computer era of material production. It will make obsolete the hundreds of factories that manufacture only a few goods. Accomplishing this would decrease waste created by hundreds of factories and will help turn what may have been wasted in specialized factories into useful material for making other items for use (cradle-to-cradle) in this phase. It will also shift global economies into local ones, providing a production method that can duplicated itself worldwide. Global information with local distribution is the theme.

Phase 2. Outlet Production. In computing, we can liken these systems to mainframes that can contain themselves within an office rather than a whole floor. Manufactured resources will be produced and purchased at each outlet location....

Phase 3. Personal Production. It can produce anything based on the values mentioned. This likens to the PC, laptop, and hand held device stage of computing....¹³²

Eric Hunting suggest, further, that the process of technological innovation under corporate capitalism, in a sort of "Phase 0," is laying the groundwork for this process. The high costs of technical innovation, the difficulty of capturing value from it, and the mass customization or long tail market, taken together, create pressures for common platforms that can be easily customized between products, and for modularization of components that can be used for a wide variety of products. And Hunting points out that, as we already saw in Chapter Nine, the predominant "outsource everything" and "contract manufacturing" model increasingly renders corporate hubs obsolete, and makes it possible for contractees to circumvent the previous corporate principals and undertake independent production on their own account.

I would like to suggest an additional intermediate stage in production evolution prior to regional; the industrial ecology as demonstrated by the personal computer industry. Industrial ecologies are precipitated by situations where traditional industrial age product development models fail in the face of very high technology development overheads or very high demassification in design driven by desire for personalization/customization producing Long Tail market phenomenon. A solution to these dilemmas is modularization around common architectural platforms in order to compartmentalize and distribute development cost risks, the result being 'ecologies' of many small companies independently and competitively developing intercompatible parts for common product platforms -such as the IBM PC.

Increasingly, we see today the design of many kinds of durable goods shifting away from monolithic architectures and their manufacturers shifting away from sole-ownership of production capacity. Sometimes this is intentional, sometimes it occurs when products become platforms by default through the emergence of after-market competition driven by the desire for customization and service. (as was nearly the case with the Volkswagen

¹³² Comment under Michel Bauwens, "Phases for implementing peer production: Towards a Manifesto for Mutually Assured Production," P2P Foundation *Forum*, August 30, 2008
<<http://p2pfoundation.ning.com/forum/topic/show?id=2003008%3ATopic%3A6275&page=1&commentId=2003008%3AComment%3A6377&x=1#2003008Comment6377>> See also "MAP," P2P Foundation Wiki
<<http://p2pfoundation.net/Category:MAP>>.

traditional factories. Beetle but suppressed by VW for lack of comprehension of the nature of the market phenomenon their product had produced) Production is increasingly contract-based and a growing number of 'manufacturers' don't actually manufacture anything. They just contract. This has produced a dual global trend in demassification and generalization (still across certain product sectors) of manufacturing capacity that has now produced a situation where the volume of consumer goods now produced by contract manufacture exceeds that produced by

The more vertical the market profile for a product the more this trend penetrates toward production on an individual level due high product sophistication coupled to smaller volumes. In the 90s the aerospace, defense, telecom, and IT industries experienced a phenomenon of engineering entrepreneurial flight, sometimes known as the midnight engineer phenomenon, where lack of job security coupled to cuts in benefits compelled many engineers to abandon corporate employment in favor of entrepreneurship with many becoming contract competitors to their former employers. Competitive contracting regulations in the defense industry (when they're actually respected...) tend to, ironically, turn many kinds of military hardware into open platforms by default, offering small businesses a potential to compete with larger companies where production volumes aren't all that large to begin with. Consequently, today we have a situation where key components of some military vehicles and aircraft are produced on a garage-shop production level by companies with fewer than a dozen employees.

All this represents an intermediate level of industrial demassification that is underway today and not necessarily dependent upon open source technology or peer-to-peer activity but which creates a fertile ground for that in the immediate future and drives the complementary trend in the miniaturization of machine tools.¹³³

Hunting adds, in an email to the Open Manufacturing list, that this process--"the modularization of product design, which results in the replacement of designs by platforms and the competitive commoditization of their components"--

is the reason why computers, based on platforms for modular commodity components, have evolved so rapidly compared to every other kind of industrial product and why the single-most advanced device the human race has ever produced is now something most anyone can afford and which a child can assemble in minutes from parts sourced around the world.¹³⁴

Michel Bauwens, in commenting on Hunting's remarks, notes among the "underlying trends... supporting the emergence of peer production in the physical world,"

is the 'distribution' of production capacity, i.e. lower capital requirements and modularisation making possible more decentralized and localized production, which may

¹³³ Comment under Ibid.

¹³⁴ Eric Hunting, "[Open Manufacturing] Re: Why automate? and opinions on Energy Descent?" September 22, 2008 <<http://groups.google.com/group/openmanufacturing?hl=en>>

eventually be realized through the free self-aggregation of producers.¹³⁵

The strong implications of these possibilities, for a shift in economic power from large corporations to ordinary people in the social economy, are discussed at greater length in the section immediately following this one.

One potential cloud overshadowing networked peer production is the issue of whether it could survive a disruption to the Internet, in the event the infrastructure of the latter is compromised during the terminal crises of state capitalism. It's heartening, in this light, to remember that fairly extensive computer networks were built from the ground up by private users linking their own computers together over the phone lines, without any central web servers. The PC modem was developed in 1978 by Ward Christensen and Randy Suess to transfer data directly between their computers over the phone lines. In 1979 they introduced the X Modem protocol which allowed computers to transfer files directly without a host system. Based on these technologies, small computer networks sprang up outside the ARPANET. For example, in 1979 three students at Duke and UNC created a modified version of the UNIX protocol which made possible computer linkups over the phone lines. They used it as the infrastructure of Usenet. In 1983, Tom Jennings designed an interface system for posting bulletin boards on interlinked PCs, which became the basis of Fidonet. By 1990, it linked 2500 computers in the U.S. Meanwhile Bulletin Board Systems (BBS) in the 1980s linked several million users into assorted virtual communities, based on direct computer-to-computer connections over the phone lines. Along the same lines, wireless urban "mesh networks" today can use the electromagnetic spectrum to relay data directly from sender to sender, without the content ever passing through a centralized server. Unfortunately, such mesh networks can operate only over a few blocks--at most a single city.¹³⁶

F. The Social Economy and the Crisis of Capitalism

As Michel Bauwens describes it, it is becoming increasingly impossible to capture value from the ownership of ideas, designs, and technique--all the "ephemera" and "intellect" that Peters writes about as a component of commodity price--leading to a crisis of sustainability for capitalism.

Recall the following: the thesis of cognitive capitalism says that we have entered a new phase of capitalism based on the accumulation of knowledge assets, rather than physical production tools. [McKenzie Wark's] vectoralist thesis says that a new class has arisen which

¹³⁵ Michel Bauwens, "Contract manufacturing as distributed manufacturing," *P2P Foundation Blog*, September 11, 2008 <<http://blog.p2pfoundation.net/contract-manufacturing-as-distributed-manufacturing/2008/09/11>>.

¹³⁶ Manuel Castels, *The Rise of the Network Society*. Second edition (Oxford and Malden, MA: Blackwell Publishers, 1996, 2000), pp. 49-50; Johan Soderberg, *Hacking Capitalism*, pp. 96-97.

controls the vectors of information, i.e. the means through which information and creative products have to pass, for them to realize their exchange value. They both describe the processes of the last 40 years, say the post-1968 period, which saw a furious competition through knowledge-based competition and for the acquisition of knowledge assets, which led to the extraordinary weakening of the scientific and technical commons. And they do this rather well.

But in my opinion, both theses fail to account for the newest of the new, i.e. to take into account the emergence of peer to peer as social format. What is happening?

In terms of knowledge creation, a vast new information commons is being created, which is increasingly out of the control of cognitive capitalism.¹³⁷

In a later blog post for the P2P Foundation, he elaborates on the nature of cognitive capitalism as a response to the limits on accumulation in the finite physical realm, attempting a new form of accumulation based on ownership of the cognitive realm. But this attempt is doomed to fail because of the increasing untenability of property rights in the information realm.

This system is now facing serious barriers that are a function of the finiteness of the natural resource base that is our planet, and global warming is one example of it. One of the meanings of global warming, coupled with the general trend of globalization, is that our growth-system now covers the whole planet, there is no more outside. What this means is that the limits of an extensive development are being reached....

This is no trivial affair, as the failure of extensive development is what brought down earlier civilizations and modes of production. For example, slavery was not only marked by

¹³⁷ Michel Bauwens, *P2P and Human Evolution*. Draft 1.994 (Foundation for P2P Alternatives, June 15, 2005) <<http://integralvisioning.org/article.php?story=p2ptheory1>>. I believe he was influenced by a point Stefan Merten made in his Oekonux interview with Geert Lovink ("Oekonux: Interview with Stefan Merten," April 24, 2001 <<http://www.nettime.org/Lists-Archives/nettime-l-0104/msg00127.html>>):

Today the material side of material production is rather unimportant even in capitalism. And information is something very different from the material world simply by the fact that you can copy it without losing the original.

What is known as the new/Internet/digital economy is indeed the plain old money economy on new territories. What this economy does is to try to make profit from things which are inherently not profitable.

The very basis for any profit is scarcity. Since the invention of computers and particularly the Internet, however, scarcity of digital information is difficult to keep. Once a digital information has been produced it is reproducible with extremely marginal cost. This is the reason why information industries of all kinds are making such a fuss about intellectual property rights: IPRs could make digital information a scarce good you then can make profit with. Personally I think the technical means of reproduction, which meanwhile are distributed among millions of households, opened the bottle, the ghost is out and nothing will be able to put it back in there..

low productivity, but could not extend this productivity as that would require making the slaves more autonomous, so slave-based empires had to grow in space, but at a certain point in that growth, the cost of expansion exceeded the benefits. This is why feudalism finally emerged, a system which refocused on the local, and allowed productivity growth as serfs had a self-interest in growing and ameliorating the tools of production.

The alternative to extensive development is intensive development, as happened in the transition from slavery to feudalism. But notice that to do this, the system had to change, the core logic was no longer the same. The dream of our current economy is therefore one of intensive development, to grow in the immaterial field, and this is basically what the experience economy means. The hope that it expresses is that business can simply continue to grow in the immaterial field of experience.

However, Bauwens writes, this is not feasible. The emergence of the peer model of production, based on the non-rivalrous nature and virtually non-existent marginal cost of reproduction of digital information, and coupled with the increasing unenforceability of "intellectual property" laws, means that capital is incapable of realizing returns on ownership in the cognitive realm.

1) The creation of non-monetary value is exponential

2) The monetization of such value is linear

In other words, we have a growing discrepancy between the direct creation of use value through social relationships and collective intelligence (open platforms create near infinite value through the operations of the laws of Metcalfe and Reed), but only a fraction of that value can actually be captured by business and money. Innovation is becoming social and diffuse, an emergent property of the networks rather than an internal R & D affair within corporations; capital is becoming an a posteriori intervention in the realization of innovation, rather than a condition for its occurrence; more and more positive externalizations are created from the social field.

What this announces is a crisis of value, most such value is 'beyond measure', but also essentially a crisis of accumulation of capital. Furthermore, we lack a mechanism for the existing institutional world to re-fund what it receives from the social world. So on top of all of that, we have a crisis of social reproduction: peer production is collectively sustainable, but not individually.¹³⁸

Thus, there are two simultaneous crises: first, the failure of artificial abundance through subsidized inputs and externalization of cost, endless supplies of natural resources for appropriation (aided by state favoritism), and the availability of new markets as outlets for surplus capital and output; and second, the failure of artificial scarcity in the cognitive realm. Taken together, this means that while markets and private ownership

¹³⁸ Michel Bauwens, "Can the experience economy be capitalist?" *P2P Foundation Blog*, September 27, 2007 <<http://blog.p2pfoundation.net/can-the-experience-economy-be-capitalist/2007/09/27>>.

of physical capital will persist, "the core logic of the emerging experience economy, operating as it does in the world of non-rival exchange, is unlikely to have capitalism as its core logic."

Johan Soderberg relates this crisis of realization under state capitalism to capital's growing dependence on the state to capture value from social production and redistribute it to private corporate owners. This takes the form both of "intellectual property" law, as well as direct subsidies from the taxpayer to the corporate economy. He compares, specifically, the way photocopiers were monitored in the old USSR to protect the power of elites in that country, to the way the means of digital reproduction are monitored in this country to protect corporate power.¹³⁹ James O'Connor's theme, of the ever-expanding portion of the operating expenses of capital which come from the state, is also relevant here.¹⁴⁰ The important point is that this strategy of shifting the burden of realization onto the state is untenable. The proliferation of bittorrent and episodes like the DeCSS uprising have shown that "intellectual property" is ultimately unenforceable. The RIAA's shakedown operation can be circumvented by the simple expedients of encryption and proxy servers. And as we have already seen, in an economy of subsidized inputs, the demand for such inputs grows exponentially, faster than the state can meet them. The state capitalist system will reach a point at which, thanks to the collapse of the portion of value comprised of rents on artificial property, the base of taxable value is imploding at the very time big business most needs subsidies to stay afloat.

In another article, in which he develops these themes at greater length, Bauwens writes that capitalism's successor system is likely to have a significant role for markets, but that the two structural presuppositions of existing capitalism--artificial abundance of resources and artificial scarcity of information--will be replaced by the reverse.

We live in a political economy that has it exactly backwards. We believe that our natural world is infinite, and therefore that we can have an economic system based on infinite growth. But since the material world is finite, it is based on pseudo-abundance.

And then we believe that we should introduce artificial scarcities in the world of immaterial production, impeding the free flow of culture and social innovation, which is based on free cooperation, by creating the obstacle of permissions and intellectual property rents protected by the state.

What we need instead is a political economy based on a true notion of scarcity in the material realm, and a realization of abundance in the immaterial realm.¹⁴¹

¹³⁹ Johan Soderberg, *Hacking Capitalism*, pp. 144-145.

¹⁴⁰ James O'Connor, *The Fiscal Crisis of the State* (New York: St. Martin's Press, 1973).

¹⁴¹ Michel Bauwens, "Peer-to-Peer Governance, Democracy, and Economic Vision: P2P as a Way of Living---Part 2," *Master New Media*, October 27, 2007 <http://www.masternewmedia.org/information_access/p2p-peer-to-peer-economy/peer--to-peer-governance-production-property-part-2-Michel-Bauwens-20071020.htm>.

In the purely immaterial realm, the services of capital are becoming increasingly superfluous, as described by Michael Hardt and Antonio Negri:

...the cooperative aspect of immaterial labor is not imposed or organized from the outside, as it was in previous forms of labor, but rather, *cooperation is completely immanent to the laboring activity itself*. This fact calls into question the old notion (common to classical and Marxian political economics) by which labor power is conceived as "variable capital," that is, a force that is activated and made coherent only by capital.... Brains and bodies still need others to produce value, but the others they need are not necessarily provided by capital and its capacities to organize production. Today productivity, wealth, and the creation of social surpluses take the form of cooperative interactivity through linguistic, communicational, and affective networks.¹⁴²

In addition, capitalism faces a crisis of realization in another regard that Bauwens does not directly address. For over two centuries, as Immanuel Wallerstein observed, the system of capitalist production based on wage labor has depended on the ability to externalize many of its reproduction functions on the non-monetized informal and household economies, and on organic social institutions like the family which were outside the cash nexus.

Historically, capital has relied upon its superior bargaining power to set the boundary between the money and social economies to its own advantage. The household and informal economies have been allowed to function to the extent that they bear reproduction costs that would otherwise have to be internalized in wages; but they have been suppressed (as in the Enclosures) when they threaten to increase in size and importance to the point of offering a basis for independence *from* wage labor.

Just why the propertied classes came to see common rights as such a threat, and adopted a policy of Enclosure, is suggested by Raphael Samuel's account of Headington Quarry, a community of squatters who worked in quarries and small brickworks. Residents had family garden allotments, and engaged in a considerable amount of "poaching, rabbit-snaring, pig-rearing and cow-keeping...." Between the gardens and small game, they often had sufficient surplus to trade among themselves or to sell in the city.

The notion of common rights was built in to the cottager's economy, and so too was that of personal independence: it was possible to make 'a bit of a living' even when wage-paid labour gave out, and even when there was no money, to keep the table supplied with food, and have enough food to feed the fire. Perhaps it is this which helps to explain why Quarry, though 'rough' by the standards of more regulated communities, seems to have escaped the

¹⁴² Michael Hardt and Antonio Negri, *Empire* (Cambridge and London: Harvard University Press, 2000), p. 294.

kind of destitution so familiar in the late Victorian countryside, and so rampant in the towns. Subsistence never gave out, however severe the season, nor was charity ever called upon to take its place--there was little available save that which the working population of the village provided for themselves....

Numbers of villagers escaped the servitudes of wage labour altogether, and there were many more for whom employment was characteristically short term and indirect. Within the village nothing like a capitalist class emerged. In building the smaller jobs were often taken on by pairs of mates, or by individuals acting on their own, or with a helper. Stone-digging work and navvying were often in the hands of 'companionships'--self-selecting bands of men, linked to one another by ties of friendship or blood and sometimes both.

The village was also, as Ward writes on Samuel's authority, "singularly free of landlords."¹⁴³

The employing classes' fear of the subsistence economy made perfect sense. For as Kropotkin asked:

If every peasant-farmer had a piece of land, free from rent and taxes, if he had in addition the tools and the stock necessary for farm labour--Who would plough the lands of the baron? Everyone would look after his own....

If all the men and women in the countryside had their daily bread assured, and their daily needs already satisfied, who would work for our capitalist at a wage of half a crown a day, while the commodities one produces in a day sell in the market for a crown or more?¹⁴⁴

"The household as an income-pooling unit," Wallerstein writes, "can be seen as a fortress both of accommodation to and resistance to the patterns of labor-force allocation favored by accumulators." Capital has tended to favor severing the nuclear family household from the larger territorial community or extended kin network, and to promote an intermediate-sized income-pooling household. The reason is that too small a household falls so far short as a basis for income pooling that the capitalist is forced to commodify too large a portion of the means of subsistence, i.e. to internalize the cost in wages.¹⁴⁵ It is in the interest of the employer not to render the worker *totally* dependent on wage income, because without the ability to carry out some reproduction functions through the production of use value within the household subsistence economy, the

¹⁴³ Colin Ward, "The hidden social history of housing--1. Cotters and squatters: informal settlements of the eighteenth and nineteenth century," in *Social Policy: An Anarchist Response* (London: Freedom Press, 1996), pp. 25-26. [19-29] The quote is from Samuel, "Quarry roughs: life and labour in Headington Quarry 1860-1920," in Samuel, *Village Life and Labour* (Routledge & Kegan Paul, 1975).

¹⁴⁴ Peter Kropotkin, *The Conquest of Bread* (New York: Vanguard Press, 1926), pp. 36-37.

¹⁴⁵ Immanuel Wallerstein, "Household Structures and Labor-Force Formation in the Capitalist World Economy," in Joan Smith, Immanuel Wallerstein, Hans-Dieter Evers, eds., *Households and the World Economy* (Beverly Hills, London, New Delhi: Sage Publications, 1984), pp. 20-21.

worker will be "compelled to demand higher real wages...."¹⁴⁶ On the other hand, "[t]he chief disadvantage of the too large units was that the level of work output required to ensure survival was too low.... [This] diminished pressure to enter the wage-labor market."¹⁴⁷

The use of the social economy as a base for independence from wage employment has a venerable history. According to E. P. Thompson, "[n]ot only did the benefit societies on occasion extend their activities to the building of social clubs or alms-houses; there are also a number of instances of pre-Owenite trade unions when on strike, employing their own members and marketing the product."¹⁴⁸ G. D. H. Cole describes the same phenomenon:

As the Trade Unions grew after 1825, Owenism began to appeal to them, and especially to the skilled handicraftsmen, who were still an important element in the towns. Groups of workers belonging to a particular craft began to set up Co-operative Societies of a different type--societies of producers which offered their products for sale through the Co-operative Stores. Individual Craftsmen, who were Socialists, or who saw a way of escape from the exactions of the middlemen, also brought their products to the stores to sell."¹⁴⁹

...[This pattern of organization was characterized by] societies of producers, aiming at co-operative production of goods and looking to the Stores to provide them with a market. These naturally arose first in trades requiring comparatively little capital or plant. They appealed especially to craftsmen whose independence was being threatened by the rise of factory production or sub-contracting through capitalist middlemen.

The most significant feature of the years we are discussing was the rapid rise of this... type of Co-operative Society and the direct entry of the Trades Unions into Co-operative production. Most of these Societies were based directly upon or at least very closely connected with the Unions of their trades, and many of them were actually indistinguishable from the Unions, which took up production as a part of their Union activity--especially for giving employment to their members who were out of work or involved in trade disputes....¹⁵⁰

The aims and overall vision of such organization was well expressed in the rules of the Ripponden Co-operative Society, formed in 1832 in a weaving village in the Pennines:

¹⁴⁶ Wallerstein and Joan Smith, "Households as an institution of the world-economy," in Smith and Wallerstein, eds., *Creating and Transforming Households: The constraints of the world-economy* (Cambridge; New York; Oakleigh, Victoria; Paris: Cambridge University Press, 1992), p. 16. [3-23]

¹⁴⁷ Wallerstein, "Household Structures," p. 20.

¹⁴⁸ Thompson, *Making of the English Working Class*, p. 790.

¹⁴⁹ G.D.H. Cole. *A Short History of the British Working Class Movement (1789-1947)* (London: George Allen & Unwin, 1948), p. 76.

¹⁵⁰ *Ibid.* p. 78.

By the increase of capital the working classes may better their condition, if they only *unite* and set their shoulder to the work; by uniting we do not mean strikes and turning out for wages, but like men of one family, strive to begin to work for ourselves....

The plan of co-operation which we are recommending to the public is not a visionary one but is acted upon in various parts of the Kingdom; we all live by the produce of the land, and exchange labour for labour, which is the object aimed at by all Co-operative societies. We labourers do all the work and produce all the comforts of life;--why then should we not labour for ourselves and strive to improve our conditions.¹⁵¹

As the reference to exchanging "labour for labour" suggests, the system of cooperative exchange grew beyond the level of the individual retail store. Cooperative producers' need for an outlet led to Labour Exchanges, where workmen and cooperatives could directly exchange their product so as "to dispense altogether with either capitalist employers or capitalist merchants." Exchange was based on labor time, with a currency of paper "labour notes." "Owen's Labour Notes for a time not only passed current among members of the movement, but were widely accepted by private shopkeepers in payment for goods." Of course, this was a time in which the public was used to a wide variety of private banknotes in circulation.¹⁵²

The principle of labor-based exchange was employed on a large-scale. In 1830 the London Society opened an Exchange Bazaar for exchange of products between cooperative societies and individuals.¹⁵³ The Co-operative Congress, held at Liverpool in 1832, included a long list of trades among its participants; the b's alone had eleven trades. The National Equitable Labour Exchange, organized in 1832-33 in Birmingham and London, was a venue for the direct exchange of products between craftsmen, using labor-notes as a medium of exchange.¹⁵⁴

The main difference in our own day is that the development of small-scale production technology has resulted in a revolutionary shift in competitive advantage from wage labor to the innformal economy. The rapid growth of technologies for home production in the twentieth century, based on small-scale electrically powered machinery and new forms of intensive cultivation, has led to a major shift in the comparative efficiencies of large- and small-scale production. The comparative efficiencies of the two systems were pointed out, as we have seen, by Ralph Borsodi almost eighty years ago, and the trend has continued since.

As James O'Connor described the phenomenon in the 1980s, "the accumulation of

¹⁵¹ Ibid. pp. 793-794.

¹⁵² Ibid., pp. 78-79.

¹⁵³ Ibid., p. 76.

¹⁵⁴ Thompson, *Making of the English Working Class*, p. 791.

stocks of means and objects of reproduction within the household and community took the edge off the need for alienated labor."

Labor-power was hoarded through absenteeism, sick leaves, early retirement, the struggle to reduce days worked per year, among other ways. Conserved labor-power was then expended in subsistence production.... The living economy based on non- and anti-capitalist concepts of time and space went underground: in the reconstituted household; the commune; cooperatives; the single-issue organization; the self-help clinic; the solidarity group. Hurrying along the development of the alternative and underground economies was the growth of underemployment (full employment at less than a living wage), ... and mass unemployment associated with the crisis of the 1980s. "Regular" employment and union-scale work contracted, which became an incentive to develop alternative, localized modes of production....

...New social relationships of production and alternative employment, including the informal and underground economies, threatened not only labor discipline, but also capitalist markets.... Alternative technologies threatened capital's monopoly on technological development... Hoarding of labor-power threatened capital's domination of production. Withdrawal of labor-power undermined basic social disciplinary mechanisms....¹⁵⁵

More recently, "Eleutheros" of *How Many Miles from Babylon?* blog, described the sense of freedom that results from a capacity for independent subsistence:

...if we padlocked the gate to this farmstead and never had any trafficking with Babylon ever again, we could still grow corn and beans in perpetuity, worlds without end, amen....

What is this low tech, low input, subsistence economy all about, what does it mean to us? It is much like Jack Sparrow's remark to Elizabeth Swann when they were marooned on the island and he told her what the Black Pearl really was, it was freedom. Like that to us our centuries old agriculture represents for us a choice. And having a choice is the very essence and foundation of our escape from Babylon.

So this is my answer to the anonymous commenter, To walk away from Babylon, you must have choices. Alas, it is likely you don't even if you most certainly think you do. Babylon, as with any exploitative and controlling system, can only exist by limiting and eliminating your choices. After all, if you actually have choices, you may in fact choose the things that benefit and enhance you and your family rather than things that benefit Babylon.

Babylon must eliminate your ability to choose. It does so with the help of two effective ploys. First it will offer you false choices in order to distract you from the fact that you have no real choices at all....

The second way in which Babylon enforces its no-choice policy is when there really is a choice you might make, Babylon convinces you that you really don't have that choice at all.

¹⁵⁵ James O'Connor, *Accumulation Crisis* (New York: Basil Blackwell, 1984), pp. 184-186.

To be able to raise any of our own food we have to borrow money for land, right! You have to go to college, right? Gotta have wheels, gotta have a credit card, right?

Wrong. Those, and many more, are all things Babylon chants over and over until the idea that you could do without them entirely is just beyond belief.

So I bring up my corn field in way of illustration of what a real choice looks like. We produce (and even prepare, grind and bake) our staple bread with no input at all from Babylon. So we always have the choice to eat that instead of what Babylon offers. We also buy wheat in bulk and make wheat bread sometimes, but if (when, as it happened this year) the transportation cost or scarcity of wheat makes the price beyond the pale, we can look at it and say, "No, not going there, we will just go home and have our cornbread and beans." Likewise we sometimes buy food from stands and stores, and on a few occasions we eat out. But we always have the choice, and if we need to, we can enforce that choice for months on end....

Your escape from Babylon begins when you can say, "No, I have a choice. Oh, I can dine around Babylon's table if I choose, but if the Babylonian terms and conditions are odious, then I don't have to."¹⁵⁶

And the payoff doesn't require a total economic implosion. This is a winning strategy even if the money economy and division of labor persist indefinitely to some extent--as I think they will--and most people continue to get a considerable portion of their consumption needs through money purchases. I think the end-state, after Peak Oil and the other terminal crises of state capitalism have run their course, is apt to bear a closer resemblance to Warren Johnson's *Muddling Toward Frugality* and Brian Kaller's "Return to Mayberry" than Jim Kunstler's *World Made by Hand*. The point is, the knowledge that you are debt-free and own your living space free and clear, and that you *could* keep a roof over your head and food on the table without wage labor indefinitely, if you had to, has an incalculable effect on your bargaining power here and now, even while capitalism persists. As Ralph Borsodi observed almost eighty years ago, his ability to "retire" on the household economy for prolonged periods of time--and potential employers' knowledge that he could do so--enabled him to negotiate far better terms for what outside work he did decide to accept.

Colin Ward, in "Anarchism and the informal economy," envisioned a major shift from wage labor to the household economy:

[Jonathan Gershuny of the Science Policy Research Unit at Sussex University] sees the decline of the service economy as accompanied by the emergence of a self-service economy in the way that the automatic washing machine in the home can be said to supersede the laundry industry. His American equivalent is Scott Burns, author of *The Household*

¹⁵⁶ Eleutherios, "Choice, the Best Sauce," *How Many Miles from Babylon*, October 15, 2008 <<http://milesfrombabylon.blogspot.com/2008/10/choice-best-sauce.html>>.

Economy, with his claim that 'America is going to be transformed by nothing more or less than the inevitable maturation and decline of the market economy. The instrument for this positive change will be the household--the family--revitalized as a powerful and relatively autonomous productive unit'.

The only way to banish the spectre of unemployment is to break free from our enslavement to the idea of employment. The pre-industrial economy was, after all, a domestic economy, and the old American phrase for an employee, a 'hired man' carries with it the notion that he was something less than a free citizen, as does the old socialist definition of the working class as those with nothing to sell but their labour power. The very word 'employment' has only been used in its modern sense since the 1840s just as 'unemployment' in the sense in which we use it, is even more recent....

The first distinction we have to make then is between work and employment. The world is certainly short of jobs, but it has never been, and never will be, short of work. William Morris grasped this a hundred years ago when he contrasted useful work with useless toil. The second distinction is between the regular, formal, visible and official economy, and the economy of work which is not employment....

...Victor Keegan remarks that 'the most seductive theory of all is that what we are experiencing now is nothing less than a movement back towards an informal economy after a brief flirtation of 200 years or so with a formal one'.

We are talking about the movement of work back into the domestic economy....¹⁵⁷

Scott Burns, whom Ward cited above, saw the formation of communes, the buying of rural homesteads, and other aspects of the back to the land movement, as an attempt

to supplant the marketplace entirely. By building their own homes and constructing them to minimize energy consumption, by recycling old cars or avoiding the automobile altogether, by building their own furniture, sewing their own clothes, and growing their own food, they are minimizing their need to offer their labor in the marketplace. They pool it, instead, in the extended household. Like the family in colonial Connecticut or the yeoman of England, the new homesteader can internalize 70-80 per cent of all his needs in the household; his money work is intermittent when it can't be avoided altogether.¹⁵⁸

What about ordinary productive work at home? Home-working has always been a byword for exploitation, low pay and sweated labour. This is why the trade unions are so hostile towards it. But is by no means a declining industry, and it is possible to reduce its least desirable aspects.... The most suggestive illustration of one of the preconditions for effectively moving industrial production back into the home comes from the many studies of the informal economy in Italy. Sebastino Brusco claimed that it was only the existence of a vast informal sector of small workshops that saved the Italian economy from ruin in the

¹⁵⁷ Colin Ward, "Anarchism and the informal economy," *The Raven* No. 1 (1987), pp. 27-28.

¹⁵⁸ Burns, *The Household Economy*, p. 47.

1970s. He points to the phenomenon of whole villages with power tools sub-contracting for the industrial giants of the motor industry, and when hit by recession, turning to other kinds of industrial components.

A BBC film took us to another Italian industrial village where 80 per cent of the women's tights made in Italy are produced. It illustrated two aspects of the informal economy there: the woman who, using a hand machine, earns a pittance from the contractor who brings her the unfinished goods for assembly and collects them finished, in the classic sweatshop situation; and, as a completely contrasted example, the woman who, with her mother, makes a good living assembling tights in her home, using a sophisticated machine which cost them L5,000 and is now paid for. Brusco claimed that what we were seeing was the decentralisation of manufacturing industry in a way which for him, as for Kropotkin, foreshadowed the pattern of a post-industrial society. Even Kropotkin's combination of industry and agriculture can be found, and is in fact traditional, in Italy. Philip Mattera reports: "There are even people who have been moonlighting in agriculture. Studies of employees of the few large factories of the South, especially the huge Italsider plant in Taranto, have found that many are using their free time to resume their prior occupation as small farmers.'

The key difference between Brusco's two examples of the tights-makers was that one was trapped in the sweated labour situation and the other was freed from it by increased productivity, in just the same way as do-it-yourself users of power tools have increased theirs. It is of course a matter of access to a very modest amount of credit.¹⁵⁹

Credit considerations affect the family farmer in a similar manner. The family farm still tends to predominate even in mechanized production, simply because the economies of larger-scale industrial farming under direct corporate ownership and management are so poor, compared to those of a family farm which achieves full utilization of all equipment but can be directly worked by a single family or by a family with the help of hired laborers under their direct supervision.¹⁶⁰ As a result, conventional agriculture is governed by the contract system, in which corporate agribusiness controls "the supply chains between farmers, their input suppliers and, especially, their market." It amounts to a kind of proletarianization on the same pattern as Brusco's first example of the home-work system in Italy, in which the farmer loses control of what and how much to plant, what methods to use, and so forth, and is paid barely enough to make ends meet.¹⁶¹ As with the putting-out system for making tights in Italy, and the artisans in Nairobi, it's primarily the lack of credit and corporate control of the supply chain that constrain the small producer.

As we already saw in Chapter Nine, the shift from physical to human capital as the primary source of productive capacity in so many industries, along with the imploding

¹⁵⁹ Ward, "Anarchism and the informal economy," pp. 31-32.

¹⁶⁰ Harold Brookfield, "Family Farms Are Still Around: Time to Invert the Old Agrarian Question," *Geography Compass* 2:1 (2008), pp. 114-115.

¹⁶¹ *Ibid.*, pp. 118-119.

price and widespread dispersion of ownership of capital equipment in so many industries, means that corporate employers are increasingly hollowed out and only maintain control over the physical production process through legal fictions. When so much of actual physical production is outsourced to the small sweatshop or the home shop, the corporation becomes a redundant "node" that can be bypassed; the worker can simply switch to independent production, cut out the middleman, and deal directly with suppliers and outlets. And the exponentially increasing demand for local produce, and the rise of farmers' markets and community-supported agriculture, mean increasing opportunities for family farmers, similarly, to circumvent ADM's and Cargill's control of the supply chains and produce directly for the local market.

We're experiencing a singularity, of sorts, in which it is becoming impossible for capital to prevent a shift in the supply of an increasing proportion of the necessities of life from mass produced goods purchased with wages, to small-scale production in the informal and household sector. The upshot is likely to be something like Vinay Gupta's "Unplugged" movement (see below), in which the possibilities for low-cost, comfortable subsistence off the grid result in exactly the same situation, the fear of which motivated the propertied classes in carrying out the Enclosures: a situation in which the majority of the public can take wage labor or leave it, if it takes it at all, the average person works only on his own terms when he needs supplemental income for luxury goods and the like, and (even if he considers supplemental income necessary in the long run for an optimal standard of living) can afford in the short run to quit work and live off his own resources for prolonged periods of time, while negotiating for employment on the most favorable terms. It will be a society in which workers, not employers, have the greater ability to walk away from the table. It will, in short, be the kind of society Wakefield lamented in the colonial world of cheap and abundant land: a society in which labor is hard to get on any terms, and almost impossible to hire at a low enough wage to produce significant profit.

The potential for defection is heightened by the greater efficiency with which the counter-economy extracts use-value from a given amount of land or capital.

...[T]he owning classes use less efficient forms of production precisely because the state gives them preferential access to large tracts of land and subsidizes the inefficiency costs of large-scale production. Those engaged in the alternative economy, on the other hand, will be making the most intensive and efficient use of the land and capital available to them. So the balance of forces between the alternative and capitalist economy will not be anywhere near as uneven as the distribution of property might indicate.

If everyone capable of benefiting from the alternative economy participates in it, and it makes full and efficient use of the resources already available to them, eventually we'll have a society where most of what the average person consumes is produced in a network of self-employed or worker-owned production, and the owning classes are left with large tracts of land and understaffed factories that are almost useless to them because it's so hard to hire labor except at an unprofitable price. At that point, the correlation of forces will have shifted

until the capitalists and landlords are islands in a mutualist sea--and their land and factories will be the last thing to fall, just like the U.S Embassy in Saigon.¹⁶²

Johan Soderberg refers to the possibility that increasing numbers of workers will "defect from the labour market" and "establish means of non-waged subsistence," through efficient use of the waste products of capitalism.¹⁶³ The "freegan" lifestyle (less charitably called "dumpster diving") is one end of a spectrum of such possibilities. At the other end is low-cost recycling and upgrading of used and discarded electronic equipment: the rapid depreciation of computers makes it possible to add RAM to a model a few years old at a small fraction of the cost of a new computer, with almost identical performance.

The central barrier to garage production of computers is the microprocessor, which can only be produced on capital equipment costing nearly a billion dollars. But reprogrammable microprocessors will eliminate that barrier, with millions of discarded chips enabling garage industry to operate entirely on recycled inputs in the same way that minimills reprocess scrap steel on a small scale wherever a market exists. In Cory Doctorow's *Themepunks*, for example, a small workshop uses the chips harvested from thousands of discarded Elmo dolls.¹⁶⁴

Paul Goodman and Ivan Illich both remarked, in their unique ways, on the effect of radical monopolies in making comfortable poverty impossible. As the alternative economy undermines the ability of artificial property rights to levy tribute on access to the means of subsistence, comfortable poverty becomes increasingly feasible.

Dave Pollard, of *How to Save the World* blog, describes his own version of the singularity in "The Virtuous Cycles of the Gift Economy." As people do the things they love and become better at them, it takes less and less money to live. People need to work less, and can devote the saved time not only to further developing production technique. People develop more skills, become more self-sufficient, and less dependent on store-bought commodities purchased with wages. They also invest a greater share of their productive energy in the gift economy and mutual aid, and a greater share of their time in building social capital. As a result, people on average are happier, healthier, and more responsible and competent; social problems and social costs decline, which further adds to the virtuous cycle of reduced cost and frees up more time from work. "These cycles are, of course, subversive. They threaten to undermine and starve the 'market' economy by freeing us, the end-customers of that economy, from the need to pay money into it."¹⁶⁵

¹⁶² Kevin Carson, "Building the Structure of the New Society Within the Shell of the Old," *Mutualist Blog: Free Market Anti-Capitalism*, March 22, 2005 <<http://mutualist.blogspot.com/2005/03/building-structure-of-new-society.html>>.

¹⁶³ Soderberg, *Hacking Capitalism*, p. 172.

¹⁶⁴ http://archive.salon.com/tech/feature/2005/09/12/themepunks_1/index.html

¹⁶⁵ David Pollard, "The Virtuous Cycles of the Gift Economy," *How to Save the World*, December 6, 2006 <<http://blogs.salon.com/0002007/2006/12/06.html>>. The centerpiece of Pollard's article is a flow chart,

This undermining and starving is exactly what we discussed in Chapter Thirteen: building the structure of the new society within the shell of the old. Pollard describes, as one way of bring about major global change, "incapacitation--rendering the old order unable to function by sapping what it needs to survive."¹⁶⁶

But suppose if, instead of waiting for the collapse of the market economy and the crumbling of the power elite, we brought about that collapse, guerrilla-style, by making information free, by making local communities energy self-sufficient, and by taking the lead in biotech away from government and corporatists (the power elite) by working collaboratively, using the Power of Many, Open Source, unconstrained by corporate allegiance, patents and 'shareholder expectations'?'¹⁶⁷

Gupta's short story "The Unplugged"¹⁶⁸ related his vision of how such a singularity would affect life in the West.

Wealth stored as dollars was essentially a share in America's national economy - a credit note backed by the US Government. But Buckminster Fuller showed us that wealth-as-money was a specialized subset of Wealth - the ability to sustain life.

To "get off at the top" requires millions and millions of dollars of stored wealth. Exactly how much depends on your lifestyle and rate of return, but it's a lot of money, and it's volatile depending on economic conditions. A crash can wipe out your capital base and leave you helpless, because all you had was shares in a machine.

So we Unpluggers found a new way to unplug: an independent life-support infrastructure and financial architecture - a society within society - which allowed anybody who wanted to "buy out" to "buy out at the bottom" rather than "buying out at the top."

If you are willing to live as an Unplugger does, your cost to buy out is only around three months of wages for a factory worker, the price of a used car. You never need to "work" again--that is, for money which you spend to meet your basic needs.

The idea was to combine "Gandhi's Goals" ("self-sufficiency," or "the freedom that comes from owning your own life support system") with "Fuller's Methods" (the dymaxion principle of getting more with less). Such freedom

allows us to disconnect from the national economy as a way of solving the problems of our

which conveys these ideas far more coherently than I can in prose.

¹⁶⁶ David Pollard, "All About Power and the Three Ways to Topple It (Part 1)," *How to Save the World*, February 18, 2005 <<http://blogs.salon.com/0002007/2005/02/18.html>>.

¹⁶⁷ Pollard, "All About Power--Part Two," *How to Save the World*, February 21, 2005 <<http://blogs.salon.com/0002007///2005/02/21.html>>.

¹⁶⁸ Vinay Gupta, "The Unplugged," *How to Live Wiki*, February 20, 2006 <http://howtolivewiki.com/en/The_Unplugged>.

planet one human at a time. But Gandhi's goals don't scale past the lifestyle of a peasant farmer and many westerners view that way of life as unsustainable for them personally: I was not going to sell my New York condo and move to Oregon to live in a hut, you know?...

Fuller's "do more with less" was a method we could use to attain self-sufficiency with a much lower capital cost than "buy out at the top." An integrated, whole-systems-thinking approach to a sustainable lifestyle - the houses, the gardening tools, the monitoring systems - all of that stuff was designed using inspiration from Fuller and later thinkers inspired by efficiency. The slack - the waste - in our old ways of life were consuming 90% of our productive labor to maintain.

A thousand dollar a month combined fuel bill is your life energy going down the drain because the place you live sucks your life way in waste heat, which is waste money, which is waste time. Your car, your house, the portion of your taxes which the Government spends on fuel, on electricity, on waste heat... all of the time you spent to earn that money is wasted to the degree those systems are inefficient systems, behind best practices!

Our present discussion dovetails nicely with our discussion in Chapter Twelve of resilient communities and local production as a response to Peak Oil. James L. Wilson, at the Partial Observer, writes of ordinary people seceding from the wage system and meeting as many of their needs as possible locally, primarily as a response to the price increases from Peak Oil--but in so doing, also regaining control of their lives and ending their dependence on the corporation and the state.

Dad laughed. "You're lucky Gramma only lives a few blocks away. When I was your age my grandparents lived 2000 miles away!"

"2000 miles!" Milton, Rose's big brother, gasped. "Did you ever get to see them?"

"Oh, once, maybe twice a year. We flew, and sometimes they flew to visit us. But then flying got too expensive, and there were horrible experiences with flight delays, which is no fun for kids or their parents. And so we tried driving, but it was hard for my parents to both get the vacation days from their jobs at the same time. It would take four days to get there and four to get back just to see Gramma and Grampa for five days. And anyway, the price of gas got so high that even driving got to be too expensive. So, then we saw them once every year-and-a-half to two years."

"But why would they live so far away from you?"

"Because of my grampa's job, and also my Mom's job."

"Why didn't they live closer and have different jobs?"

"Good question. They had to stay with the companies they worked for because that's who paid for their health care."

"Were they slaves, Daddy?"

Dad laughed, "No! No, that's not what . . . nah." But he thought to himself, "Maybe they were, in a way."

* * *

"Well, you see all these people working on their gardens? They used to not be here. People had grass lawns, and would compete with each other for having the greenest, nicest grass. But your grandma came home from the supermarket one day, sat down, and said, 'That's it. We're going to grow our own food.' And the next spring, she planted a vegetable garden where the grass used to be.

"And boy, were some of the neighbors mad. The Homeowners Association sued her. They said the garden was unsightly. They said that property values would fall. But then, the next year, more people started planting their own gardens.

"And not just their lawns. People started making improvements on their homes, to make them more energy-efficient. They didn't do it to help the environment, but to save money. People in the neighborhood started sharing ideas and working together, when before they barely ever spoke to each other....

"And people also started buying from farmer's markets, buying milk, meat, eggs and produce straight from nearby farmers. This was fresher and healthier than processed food. They realized they were better off if the profits stayed within the community than if they went to big corporations far away.

"This is when your grandma, my Mom, quit her job and opened started a bakery from home. It was actually in violation of the zoning laws, but the people sided with grandma against the government. When the government realized it was powerless to crack down on this new way of life, and the people realized they didn't have to fear the government, they became free. And so more and more people started working from home. Mommies and Daddies used to have different jobs in different places, but now more and more of them are in business together in their own home, where they're close to their children instead of putting them in day care."....

Milton said, "Dad, it sounds like things were a lot worse back then. But some people say that the country is in decline, that we're not as wealthy as we used to be. They say we must restore our national greatness. Is that true?"

Dad said, "It depends on what you mean by wealth. No, people aren't making as much money as they used to. But they don't need to. If you make the things that money used to buy, you don't need the money. If your friends and family and work are close by, you don't need the cars and plane tickets. The people who want to define standard of living in terms of dollar value are missing the point. It's the quality of life that's important, and it's much better now than it's ever been. The people who want to restore "national greatness" don't even know what makes a nation great. For them it's military uniforms and political speeches and big businesses employing lots of people to build tanks and prisons and rockets. They talk about 'freedom,' but what they really want is for the government to be as powerful as it used to be,

which is the opposite of freedom. We didn't really become free, and this nation didn't really become great, until the government went bankrupt and fell apart. And here we are, at Gramma's house. God bless America!"¹⁶⁹

If anyone thinks Wilson's reference to the "national greatness" argument is a crude caricature, I can assure them it's not. I recall, in the early days of the Iraq War in 2003, hearing what a neoconservative talking head on one of the cable news programs regarded as an important lesson of the war. He saw the success of the attack as an answer to those who touted the shorter work weeks, higher wages, and longer vacations in Europe. Americans, he said, prefer to work longer hours in order to have a more productive economy with higher output, so that "we" can afford to keep carrier groups all over the world. In other words, it's all worth it if our cho-co-rations get "increased" from thirty to twenty grammes a week, if it pays for the vicarious thrill of another Floating Fortress on the Malabar Front. Like the English political economist who drew Coleridge's ire by dismissing a village as "of no importance" because it produced its consumption needs internally and contributed nothing to the national statistics, these people see "the economy" as some entity over and above the quality of life of actual, concrete human beings, and those human beings primarily as means to the end of serving "the economy."

If this singularity will enable the producing classes in the industrialized West to defect from the wage system, in the Third World it may enable them to skip that stage of development altogether. Gupta concluded "The Unplugged" with a hint about how the principle might be applied in the Third World: "We encourage the developing world to Unplug as the ultimate form of Leapfrogging: skip hypercapitalism and anarchocapitalism and democratic socialism entirely and jump directly to Unplugging."

Gupta envisions a corresponding singularity in the Third World, when the cost of an Internet connection, through cell phones and other mobile devices, falls low enough to be affordable by impoverished villagers. At that point, the transaction costs which hampered previous attempts at disseminating affordable intermediate technologies in the Third World, like Village Earth's Appropriate Technology Library or Schumacher's Intermediate Technology Development Group, will finally be overcome by digital network technology.

It is inevitable that the network will spread everywhere across the planet, or very nearly so. Already the cell phone has reached 50% of the humans on the planet. As technological innovation transforms the ordinary cell phone into a little computer, and ordinary cell services into connections to the Internet, the population of the internet is going to change from being predominantly educated westerners to being mainly people in poorer countries, and shortly after that, to being predominantly people living on a few dollars a day.

¹⁶⁹ James L. Wilson, "Standard of Living vs. Quality of Life," *The Partial Observer*, May 29, 2008 <<http://www.partialobserver.com/article.cfm?id=2955&RSS=1>>.

Why will the internet wind up filled with people who live in such poverty?

Because the Internet will be global, and that's how the world really is. Most people are very poor, and as the price of a connection to the Internet falls to a level they can afford, as they can afford cell phones now, we're going to get a chance to really help these people get a better life by finding them the information resources they need to grow and prosper.

Imagine that you are a poor single mother in South America who lives in a village without a clean water source. Your child gets sick now and again from the dirty water, and you feel there is nothing you can do, and worry about their survival. Then one of your more prosperous neighbors gets a new telephone, and there's a video which describes how to purify water [with a solar purifier made from a two-liter soda bottle]. It's simple, in your language, and describes all the basic steps without showing anything which requires schooling to understand. After a while, you master the basic practical skills - the year or two of high school you caught before having the child and having to work helps. But then you teach your sisters, and none of the kids get sick as often as they used to... life has improved because of the network.

Then comes solar cookers, and improved stoves, and preventative medicine, and better agriculture [earlier Gupta mentions improved green manuring techniques], and diagnosis of conditions which require a doctor's attention, with a GPS map and calendar of when the visiting doctors will be in town again.¹⁷⁰

In Gupta's story, the Unplugger movement included a significant minority of Western society, to the extent that their withdrawal from the consumer market caused economic dislocations. We have already seen, in Chapter One, the Brave New World model of push distribution that the industrial economy depends on, and in Chapter Twelve the amount of employment and economic activity that involve processing subsidized waste--the moral equivalent of digging holes and filling them back in again. It is therefore entirely reasonable to ask, as did one of E. F. Schumacher's questioners:

How do we move in a direction of intermediate technology if, in getting there, we stop growth and go through a world of social collapse and bankruptcy?

Schumacher responded that it would be largely a paper collapse: "Well, I shouldn't worry too much about it."

It's only on the money side, and that's not the real side. It's quite easy if the debtors don't pay. I'm not so terribly worried. If people have too much debt, they ought to default. And the creditors will be extremely angry and call them names, but life goes on. Now, of course, if these things are taken that seriously, then there may be just a general confusion and a depression. That can also happen.... It's not my interest, quite frankly. I would like to stick to real things. To the hungry people, to the work opportunities. On the whole, that has little

¹⁷⁰ Vinay Gupta, "What's Going to Happen in the Future," *The Bucky-Gandhi Design Institution*, June 1, 2008 <<http://vinay.howtolivewiki.com/blog/global/whats-going-to-happen-in-the-future-670>>.

to do with these games played in high finance.¹⁷¹

Schumacher's answer is perhaps too glib. The question of the transition period is a real one. There is a very real possibility that the material foundations of the new decentralized economy will not be sufficiently laid down before the old economy's system of circulation breaks down, so that many who are dependent on employment lose their means of support with nothing to take its place. How to manage the transition is far beyond the scope of this analysis. My main purpose has been, first, to show that such a transition is likely, whether we like it or not, as state capitalism reaches its limits and the technical and organizational means of withdrawing from it become available; and second, to show the likely outlines of a successor society based on the new technical and organizational means. My personal opinion, as I have already discussed in Chapter Twelve in regard to the crisis of centralization resulting from Peak Oil, is that the transition will be relatively long and stable, compared to (say) the catastrophic collapse scenarios of James Kunstler.

At any rate, the more widespread the means of subsistence in the informal and household economies, and the more local infrastructure exists for exchange and barter, the more closely the transition crisis will resemble the paper crisis envisioned by Schumacher. For someone who has avoided or paid off credit card debt, who has obtained a modest mortgage and made paying it off as quickly as possible his top priority, and who has a large and productive vegetable garden, the possibility of unemployment is scary. But it's nowhere near as terrifying as for someone who's currently barely making the monthly interest payments on his mortgage, and who's cashed out all his home equity and maxed out all his credit cards buying a Wii and a big-screen TV and getting a new model car every couple years. Even for the creditors and the unemployed described by Schumacher's questioner, having a roof over your head free and clear and a reliable source of food will reduce, to a large extent, the concrete harm from the paper collapse.

My hope, at least, is that conventional measures like GDP will suffer (if only gradually, over a generation) what appears to be a catastrophic implosion, as people simply stop buying shit, cut back on the hours of wage labor they previously worked to earn the money to pay for shit, and supply more and more of their own needs producing for themselves and exchanging with their neighbors. My hope, at the same time, is that people will be so busy producing for themselves and their neighbors, and enjoying their control over their own lives and work and consumption, that the collapse of the state capitalist economy won't matter very much to them.

¹⁷¹ Discussion of E. F. Schumacher's "The Ethics of Thinking Small," in Dorf and Hunter, eds., p. 182.