

Harry Braverman and the Working Class

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Abstract

In 1974 Harry Braverman published *Labor and Monopoly Capitalism*, an analysis of the impact of capitalism on work in twentieth century America. Using the concepts and theories developed by Marx in the first volume of *Capital*, Braverman's book was a biting critique of the growing degradation of work in America. A large part of Braverman's argument centered on the "deskilling" of jobs in a capitalist economy in a systematic effort to more efficiently control and coordinate the labor force to maximize profit. Braverman then documents the growth of working class occupations from 1900 to 1970 using U.S. Census data. This paper briefly reviews Braverman's argument and data and then extends the analysis through 2001 to determine the validity of the Braverman/Marxist critique.

Harry Braverman was born on December 9, 1920 in Brooklyn, New York. His parents were Jewish Polish immigrants. His father was a shoe worker. Attending Brooklyn College for one year, Braverman was forced to withdraw for economic reasons and find employment (he was not to return to college until the early 1960s when he received a Bachelor of Arts degree from the New School for Social Research in 1963). It was during his single year of college as a young man when he first became exposed to Marx and socialism. Shortly after, he joined the Young People's Socialist League.

At the age of 16 (1937) Braverman found work at the Brooklyn Naval Yards as a coppersmith apprentice, where he worked until 1941. It was in this trade that Braverman got a sense of the impact of science-based technology on jobs. He was drafted toward the end of the war and was "sent by the Army to Cheyenne, Wyoming, where as a sergeant he taught and supervised locomotive pipefitting" (Foster 1998, x). In about 1947 he

¹ My friend Mark Provost lent a few of his ideas and words to this version; I appreciate the help.

moved to Youngstown Ohio with his wife, Miriam, finding work as a steelworker. Fired from one company “at the instigation of the FBI,” Braverman managed to find work at others (Foster 1998, x).

From his early year in college on, Braverman continued his commitment to socialist ideology and to organizations devoted to the establishment of these ideals. He became a member of the Socialist Workers Party (SWP) and attended a six-month course of Marxist study at their Trotsky School in the early 1950s. But there were deep divisions in the SWP in the early 50s. In 1953, Braverman left (or was expelled from) the SWP and became a co-leader with Bert Cochran of a splinter group, the Socialist Union. It was at this point that he began co-editing and writing for their paper, the *American Socialist*, under his party name, Harry Frankel. While working and writing for this paper he worked out many of the ideas later expressed in *Labor and Monopoly Capital*.

When the *American Socialist* folded after some seven years, Braverman moved into book publishing, becoming an editor for Grove Press in 1960. At Grove he edited *The Autobiography of Malcolm X*, and later became a vice-president and general manager at Grove Press until resigning in 1967 “when the president of the company refused to publish a book by Bertrand Russell on American war crimes in Vietnam” (Livingston 2000, para 7). Braverman then became the director of Monthly Review Press and worked there until his death from cancer on August 2, 1976 at the age of 55.

My own working class credentials are not nearly so impressive. My father worked his way through college in the 1930s, becoming a mechanical engineer, but married and raised his nine children in accordance with working class values. Only three of us went on to college (none of the girls). It was while working my way through college—as a

dishwasher, a waiter, an ice cream man, and finally as a bun catcher¹ in a factory bakery—that I got a sense of how the working class is treated in America; very poorly indeed. My first paper as a graduate student in sociology was titled “Labeling and the Working Class” and was for a class on symbolic interaction. The thesis of the paper was that there was a dark side to the American success ethic: people who did not “make it” economically are labeled as inferior, and are treated as either lacking intelligence, ambition, or both. Consequently, they are treated as inferiors at work and discriminated against and mocked in life.² Fast forward several years later; I was looking for a modern day Marxist to profile for book on social theory; I ran across a reference to Harry Braverman’s *Labor and Monopoly Capital*, bought a copy and read it, and was simply awed by his mastery of both Marx and class in America.

This paper is based upon the chapter I completed on Harry Braverman. Braverman’s overall theory is taken directly from Karl Marx. His problem—a study of the objective conditions of the working class—is identical to the task Marx set for himself in *Capital*. The value of Braverman’s book is not in extending Marx’s analyses or in combining Marx’s insights with others. Rather, the value of the work is that it applies Marx’s analyses to American society in the first two-thirds of the 20th century and, further, renders Marx’s analyses truly accessible to a modern audience. It is a very successful work on both counts.

Braverman begins his analysis by pointing to a contradiction in the literature on work. There is the widespread belief and assertion that modern occupations are more demanding in terms of technical skills, educational levels, and training. So entrenched is this belief that it is rarely questioned or examined. However, even some of the same

people making these assertions are reporting widespread dissatisfaction with work--the hours, the pace, the lack of meaningful participation, low morale, high absenteeism, and early retirement (Braverman 1974/1998, 3). These two views, he points out, are somewhat contradictory. More surprising still, there is little attempt in the literature to reconcile these differences. Work, Marx (and thus Braverman) asserts, is central to the human animal. It is through work that men and women realize their very humanity. Widespread dissatisfaction with such an essential activity is a very serious issue indeed.

Worker dissatisfaction presents itself to management, Braverman explains, as “a problem in costs and controls, not in the humanization of work” (Braverman 1974/1998, 36). Braverman brings his extensive and unique life experiences—worker, foreman, editor, publisher, social activist, socialist intellectual—to his study of the “dynamic underlying the incessant transformation of work in the modern era.” In *Labor and Monopoly Capital*, Braverman details the achievement of capitalist management in gaining control of the labor process—both social organization and technology—to maximize profitability. While most will not agree with Braverman on every count, the book will give many an appreciation for the devastating effects of the detailed division of labor on human life, and the role of capitalism in spreading this division.

Braverman carefully documents 20th century business history to show that the dedication to maximize profits is the core principle organizing work under a capitalist system. The corollary to the drive to accumulate capital is the need for control over the labor process. Capitalists gain control of the labor process by separating the design and execution functions within the internal division of labor and monopolizing the former in the hands of management. This separation allows management to better control the pace

and direction of the labor process. The process also constantly creates a class of unskilled workers lacking independence, dignity, and bargaining leverage—a class totally “dominated and shaped by the accumulation of capital.”

The Working Class

The heart of Marx's critique of capitalism beats in his analysis of the effect of the capitalist mode of production on the working class. Braverman carries on this tradition. Under capitalism, workers become a “labor force,” just another factor of production, another commodity to be purchased. Controlling costs, maximizing productivity, and amassing more capital are the overriding goals of the enterprise. To do this the capitalist class has created jobs that use men and women in inhuman ways, separating their labor power from their critical faculties (Braverman 1974/1998, 96). That the process is repugnant to the workers is apparent from the high absentee rates, widespread job dissatisfaction, early retirements, and alienation. The thrust of the critique, however, does not rely upon such indicators but rather the objective conditions of work itself. Real skill is replaced by manual dexterity, conception and thought is removed from execution, control of action and pace is removed from the worker and placed in management.

The process of turning workers into commodities is continually being extended into more areas of the economy. Further, each succeeding generation has to be acclimated to the new mode of work; each has to be socialized to overcome the initial revulsion to the ever more detailed division of labor, the consequent rending of human beings. This ever-widening process, Braverman claims, becomes a permanent feature of capitalist society (Braverman 1974/1998, 96). Laborers are increasingly seen as machines, machines that can be readily adapted to the requirements of most any job. This view of

man as a machine, Braverman says, has become more than a mere analogy. For the capitalist class, the laborer as machine is how the class has come to use labor, it is how it has come to view humanity (Braverman 1974/1998, 124).

Many in the media and academe equate the working class with traditional blue-collar labor, that is, manual occupations in the goods producing industries. The conventional wisdom is that this working class is a small and shrinking minority in modern societies—that we are rapidly moving into a "postindustrial" world. In this new world almost everyone is becoming professional or at least "white collar," and average pay and working conditions of the working class that remains have made them part of the middle class, part of the bourgeoisie.

Supporters of such conventional wisdom point to the decline of manufacturing jobs and the rise of white collar work in offices and in the new service industries. When the academicians write of white collar they call forth images of managers, computer programmers, and accountants. When they write of the rise of service occupations they call forth images of lawyers, physicians, and dietitians. The reality, according to Braverman, is far different.

There have been tremendous gains in productivity among manufacturing industries. The tasks of designing the product, laying out the steps of production, coordinating the tasks, selecting the materials, scheduling the processes, calculating costs, and keeping records are all removed from the factory floor and placed in the office. By dividing the labor in such a detailed manner the capitalist gains productivity, a less skilled and thus less costly workforce, and total control over the production process (Braverman 1974/1998, 86). The application of more sophisticated technology to the

production process leads to further gains in these areas. Overall, the gain in productivity means that the capitalist can now employ fewer workers to produce a certain level of output (Braverman 1974/1998, 86).

However, this increase in the productivity of labor has been somewhat offset by a tremendous increase in the scale of production (it is the scale of production, you will recall, that makes such innovations economically feasible). Consequently, employment in production industries has not declined in absolute numbers, but it has declined in terms of its *relative* size (Braverman 1974/1998, 163-164). Braverman gathers data that demonstrates that workers in manufacturing, construction and other goods producing industries (excluding agriculture) have grown from about 14 million workers in 1920 to slightly over 23 million in 1970. However, their proportion of the working population has declined from about 46 percent in 1920 to only 33 percent of the workforce in 1970.³

If you equate working in production industries with working class, it would appear that the working class is indeed a small and shrinking minority. Braverman, however, defines the working class in much broader terms. The working class, he claims, consists of those who come to the labor market with nothing to sell but their labor (Braverman 1974/1998, 261). That labor is systematically exploited and degraded by the capitalist system. To enable growth in profit businesses break skills down to simple tasks, automate where economically feasible, and manipulate the speed of production. These processes do not just occur in manufacturing operations, Braverman adds, but throughout the capitalist economy.

While the first separation of conception and execution of tasks occurs between the factory and the office, the second occurs within the office itself. In the United States, the

proportion of clerks and administrative assistants in the working population climbed from 2 percent in 1900 to 18 percent by 1970 (204). While traditionally classified as "white collar," Braverman points out, the vast bulk of these jobs involve minimal skills and initiative, and garner wages and benefits roughly equivalent to manual occupations.

The number of service workers, he reports, rose from 1 million at the turn of the century to some 9 million by the 1970 census. While there are a couple of occupations in this grouping that require some educational credentials and extensive on the job training (for example, police supervisors, detectives, and firefighters), most are low skill, low paying, and often temporary. Some examples of the types of jobs encompassed in the service classification are janitors, chambermaids, busboys, dishwashers, childcare workers and the like. Skills required for the majority of these jobs are minimal. The pay, Braverman reports, is the worst average of all census job classifications. To this group Braverman adds retail sales workers and cashiers, people with the same skills and compensation as the majority of service workers. In 1970, Braverman reports, there were a total of 3 million such workers (253).

According to Braverman's figures, the percentage of the workforce engaged in essentially rote manual occupations, with little skill, educational requirements, autonomy, or decent compensation has been growing each decade since the turn of the century (262). He arrives at these figures by adding up the number of people working as Operatives and Laborers, Craftsmen, Clerical workers, and Service and Retail Sales workers for each census year from 1900 to 1970.⁴ Beginning in 1900 at slightly over 50 percent of the labor force, he notes that this group rises to 69 percent in 1970.⁵ An advanced capitalist society, one supposedly based on scientific technology and higher

education, seems to be predicated on the exploitation of a significant proportion of its working population.

Table 1: Working Class (in millions) 1900-2001

	1900	1910	1920	1930	1940	1950	1960	1970	1983	2001
Operatives and laborers	7.3	9.9	11.5	13.0	14.4	15.5	16.4	18.1	16.1	17.7
Craftsmen	2.9	4.0	5.0	5.7	5.6	7.3	8.0	9.5	12.3	14.4
Clerical workers	.9	2.0	3.4	4.3	5.0	7.1	9.6	14.3	16.4	18.5
Service and sales workers	3.6	4.9	4.9	7.3	8.8	8.7	10.6	13.4	21.3	29.7
Total workers	14.7	20.8	24.8	30.3	33.8	38.6	44.6	55.3	66.2	80.8
Total "active" or "experienced labor force"	29.0	37.3	42.2	48.7	51.7	57.9	64.5	80.0	100.1	135.1
<i>Workers (as percent of total "labor force")</i>										
Percentage	50.7	55.8	55.8	62.2	65.4	66.7	69.1	69.1	66	60

Source: Braverman, 1974/1998, p. 262; For 1983 & 2001, U.S. Census Bureau, Statistical Abstract of the United States: 2002 Table No. 588.

Braverman asserts that work in monopoly capitalist economies has become very polarized, with a few people having all of the technical expertise and managerial control over a largely unskilled and uneducated workforce. As conception and execution are separated, more and more technical expertise is concentrated in fewer hands. Braverman estimates that, at most, only 3 percent of the 1970 workforce consisted of such technical specialists as engineers, architects, draftsmen, designers, natural scientists and technicians. It could be, Braverman allows, that many managers who are primarily technical specialists have been excluded from this list. But it is also true that a portion of those on the list include those "whose jobs are confined to the repetition of simple activities that are rapidly learned and do not encompass any true conceptualization or planning functions" (166-167).

In addition to this 3 percent, Braverman acknowledges that there are a significant number of individuals engaged in lower levels of management as well as professional specialties. He estimates that this middle level accounts for about 20 percent of occupational employment in 1970 (279). However, Braverman points out, these occupations should not be equated with the old middle class of independent entrepreneurs of an earlier capitalist era (279). Most are wage earners dependent upon the corporations or government for their employment. Unlike the old middle class, they are part of the exploitation system. Taking their character from both capitalist and worker, he says, they take part in the expropriation of surplus from the workers, but have the same dependent characteristics as other workers, with only their labor to sell. The sheer productivity of the working class and the expropriation of the resulting surplus make the number of middle-level managers possible. Further, Braverman asserts, this group is prone to the very same rationalization techniques as other labor as soon as a great enough mass is gathered to make economical a detailed division of labor and automation (281-282).

Braverman appears somewhat uneasy about the size of this middle stratum and its import for the Marxist analysis of capitalism.⁶ But, as Braverman points out, class is part of a dynamic process, always changing and often difficult to encapsulate into neat theories and formulas. Nor does science require theory to explain all (282-283).⁷

Labor in Hyperindustrial Capitalism

There have been a number of changes in the structure of the American workforce since Braverman wrote his treatise in 1970. Recall that Braverman demonstrated that workers in manufacturing, construction and other goods producing industries (excluding agriculture) grew from about 14 million workers in 1920 to slightly over 23 million in

1970. However, he found that their proportion of the working population has declined from about 46 percent in 1920 to only 33 percent of the workforce in 1970. Data computed since Braverman indicate that the proportion of employment in manufacturing and construction have declined even further, going to 29 percent in 1980, and to 22 percent in 2000. Absolute numbers involved in manufacturing alone have actually declined in that time period, from about 22 million to about 20 million, or about 15 percent of the total employed population (Statistical Abstract of the United State 2002, Table 591). While employment in manufacturing, agriculture and public administration declined between 1980 and 2000, employment in the service industries climbed from about 29 million workers (29% of the workforce) to about 49.5 million workers or 37% of the workforce.⁸

Table 1 also presents Braverman's breakdown of occupational classifications computed for the years 1983 and 2001. As can be seen, while Braverman's working class has continued to grow in terms of absolute numbers (with the exception of "Operatives and Laborers"), going from 80 million workers in 1970 to 100 million total workers in 1983, and 135 million in 2002, the percentage of working class occupations as part of the total labor force has declined over these years. The proportion of working class occupations goes from a high of 69.1 percent of the total American labor force in 1960 and 1970 to 66 percent in 1983 and down to 60 percent in 2001.

So, for the first 70 years of the 20th century Braverman found that the percentage of the American workforce engaged in essentially rote manual and clerical occupations, with little skill, educational requirements, autonomy, or decent compensation has been growing each decade (262). However, this trend has been halted and reversed in the latter

third of the century. Though it should still be pointed out that even today the working class is still a majority (60 percent) of the employed population in hyperindustrial society, the trend now seems to be in the opposite direction.⁹ How far this trend can go is open to question. Can an industrial society (or a hyperindustrial society) exist without a significant portion of the working population engaged in rote manual or clerical labor? Is a bureaucratic-hyperindustrial society even possible without the bulk of the people engaged in detailed division of labor—isn't such a society defined by this very division? Can a capitalist society exist without exploiting a significant portion of its working population?¹⁰

While all segments of the working class have increased in terms of absolute numbers over the last decade, it is interesting to note the differences in the relative numbers among the four basic categories. Only one category experienced a proportionate decline, that of "Operatives and laborers." This group numbered some 15.5 million in 1950, or some 27 percent of the total workforce. By the year 2001 this group stood at 17.7 million, a slight rise in absolute numbers, but only 13 percent of the total workforce. Craftsmen, the skilled and semiskilled portion of manual labor also experienced a slight proportional decline. In 1950, this group numbered 7.3 million (13 percent), by 2001 they were at 14.8 million or 11 per cent of the workforce.

"Clerical" and "Service and Sales workers" both experienced rapid growth in the last half of the 20th century. The "Clerical" group has gone from 7.1 million workers in 1950 (12 percent of the workforce) to 18.5 million workers in 2001 (14 percent of the workforce). In 1950 "Service and sales workers" numbered 8.7 million (15 percent), by 2001 this group stood at 29.7 million (or 22 percent of the workforce).

What can account for these changes? It would appear that the bulk of the proportional decline of the working class (as defined by Braverman) is due to the relatively slow growth in the number of manufacturing jobs in America. These manufacturing jobs have been slow growing due to automation and international trade in which many goods now come from other countries, and many low skilled American manufacturing jobs have been exported or “outsourced.”¹¹

Compared to manufacturing, it is far more difficult to automate most personal service work. Besides, it is seldom economical to replace a small number of minimum wage unskilled laborers in a single location with technology. Compared to goods producing jobs, it is also more difficult to ship many of these jobs overseas to cheaper labor markets (though by no means impossible with some of these occupations, like telephone service representative). And this is what accounts for much of our legal and illegal immigration. If you cannot have the services provided from cheaper overseas labor markets, another option is to import cheaper foreign laborers.

Clerical work stands somewhat intermediate to manufacturing and service working class occupations. The personal computer has made it relatively inexpensive to “automate” typing and filing services even in small offices. The use of such technology greatly improves the productivity of the workers who remain. While some of clerical work can again be shipped overseas to lower wage markets, particularly with the current world-wide surplus of broadband and satellite access, many foreign labor markets still do not have the English skills, or the wage differentials, to offset the inconvenience of off-shoring such occupations.

Manufacturing jobs have been in some proportional decline in American society since 1970, accounting for 34 percent of the total workforce in 1970, 28 percent in 1983, and 24 percent in 2001. What has replaced these jobs? As just reported, some of the jobs have been replaced by clerical and service and sales workers, though the proportionate growth in these areas has not been great enough to offset manufacturing declines. The bulk of the growth in American jobs is mainly attributable to the rapid growth of "Managerial and Professional Specialty" occupations, to which we now turn.

Braverman estimates that by 1970, some 20 percent of the workforce was engaged in lower levels of management and professional specialties. By 1983, the "Managerial and professional specialty" occupations accounted for some 23,592 million of the employed, or 23 percent of the employed population. By 2001 these occupations had ballooned to 31 percent of the employed population.¹² Add to this the Technical and Sales Occupations (non-retail and non-clerical) and the figures go to 31 percent of all employment for 1983 and 39 percent for 2001.¹³ Clearly this middle level of employment has grown dramatically since Braverman's time.

Within the broad category of "Managerial and professional specialty," the fastest growth was experienced among "Executive, administrative, and managerial" occupations (EAM) and the "Professional Specialty" areas. EAM grew from 11 percent of the workforce in 1983 to 15 percent in 2001. Braverman, of course, would attribute the growth in these occupations as further evidence of centralization of coordination and control. The "Professional specialty" categories grew from 13 percent of the total workforce in 1983 to 16 percent in 2001. Within the professional specialties, which include such things as health diagnosing occupations (physicians and dentists), college

teachers, librarians, lawyers, entertainers and athletes (the latter three being very uneven in terms of prestige, pay and benefits), the proportions stayed remarkably stable over the two decades. Teaching (at all levels) is by far the largest professional specialty area, with approximately 30% of all specialty employment, health care specialties (including registered nurses, pharmacists, therapists, and physician assistants) is second with approximately 20% of all employment within the professional specialties category.

Recall that Braverman estimated that only 3 percent of the 1970 workforce consisted of technical specialists such as engineers, architects, draftsmen, designers, natural scientists and technicians. A similar computation of occupational data for 1983 and 2001 shows slight growth in the concentration of technical expertise. In 1983, about 3.5 million individuals had such occupations (3.5 percent of the total workforce). By 2001 this number had climbed to 7.3 million (4.7 percent) (Statistical Abstract of the United State, 2002, Table 588). Interestingly, computer scientists accounted for the bulk of this growth, a technical expertise almost unknown in the 1970 census. Excluding their numbers the concentration of technical expertise for both 1983 and 2001 is at Braverman's estimate of about 3 percent of the labor force.¹⁴

To conclude, the workforce of hyperindustrial society is not completely congruent with that of industrial society. As is necessary for a more complex technological infrastructure and a more bureaucratic structure, there are a higher proportion of executives, managers and professionals in the workforce. Some of these positions, no doubt, are given high degrees of latitude and freedom, some are highly paid and prestigious as well. However, contrary to the postindustrial dreamers, these elite do not (nor can they ever) make up the bulk of the society. The economy still depends on a large

working class population. The bulk of these jobs are unskilled or semi-skilled occupations, an increasing proportion in sales and personal services. While the proportion of the population engaged in goods production has declined somewhat, the number of service and sales workers has remained strong and is projected to remain so. And the unemployed and the underemployed—the industrial reserve army of Marx and Braverman—are all still very much with us.

Because our economic system is one of capitalism a great part of the sociocultural system (as well as the world-system) is organized around a need to expand capital. It is this drive that is behind the ever more detailed division of labor, the adoption of computers and other technologies to replace workers, globalization and outsourcing, immigration, the commodification of social life, the degradation of work and workers, and the economic, political, cultural polarization within and between societies, and rising tides of alienation and anomie. Contrary to Braverman, however, I do not assert that capitalism is the only force at work causing these changes; societies outside of the capitalist system are also engaged in this drift. Capitalism is an economic system that must be placed within the sociocultural web of population, technological and environmental relationships, bureaucratization, nationalism, consumerism, advance of science, and rationalization. These forces—never alone but always in interaction with one another (sometimes reinforcing, sometimes contradicting)—are the stuff of sociology.

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¹ One of my better titles, though the job itself was hell. It consisted of being stationed at a table placed at the end of a conveyer belt, packages of buns would slide on the table from the belt. My job was to grab one package with my right, one with my left, balance one package in between, and slide the three of them into the plastic tray for transport to the stores. The trays were stacked 14 high.

² I received a "B" on this paper; but I swear the bastard never read it.

³ There are two main types of employment tables that need to concern us. The first, just remarked upon, divides workers up in terms of their industry of employment. This table looks at the number of employees by industry, but it includes all occupations within these industries. So, for example, employment in "Manufacturing" would include not only the blue-collar production worker on the assembly line, but also the service worker sweeping the shop, the executive who runs the personnel department, and the secretary typing and filing the executive's correspondence.

The other type of employment table of interest looks at employment by occupational classification. There are six broad classifications used by the U.S. Census Bureau. "Managerial and professional specialty," "Technical, sales, and administrative support," "Service Occupations," "Precision production, craft, and repair," "Operators, fabricators, and laborers," and "Farming, forestry, and fishing." There are many subcategories under these categories.

The difference between employment in industries and occupations can be striking. While some 37% of the 2001 workforce were employed by service industries, only 14% of all employed persons were actually working in service occupations. These figures (and many more from the U.S. Census as well as other government sources), available at your local library and through the Internet, are especially useful in that they are records of change over time in industries and occupations.

⁴ Braverman admits that the methodology is somewhat crude. It is intended as a rough computation, based on Census data gathered for other purposes, and is therefore not ideal for this exercise. There will be some occupations included in his working class estimate who are paid closer to a managerial scale, and in which the occupation enjoys a degree of autonomy. However, there will be other occupations excluded from his estimate, particularly in some of the technical fields, who have little autonomy or compensation.

⁵ It should be emphasized that these figures do not include agriculture, a significant occupation in 1900 (in terms of numbers). Braverman argues that while the compensation for such an occupation was uneven (though often low), the autonomy and skill were very high indeed.

⁶ According to Karl Marx (and thus Braverman), as capitalism develops the working class is supposed to become progressively de-skilled, exploited, and larger as former capitalists and the middle stratum of self-employed small businessmen are absorbed into its ranks. Eventually, the vast majority of people within capitalist society become workers (95 percent is a figure often given) with just a few capitalists at the top. Then, comes the revolution.

⁷ Marxists are insistent that their brand of social science is truly scientific.

⁸ Again, these figures are for the number of employees by industry, but they include all occupations within these industries. So, for example, employment in "Manufacturing" would include not only the blue-collar production worker on the assembly line, but also the service worker sweeping the shop, the executive who runs the personnel department, and the secretary typing and filing the executive's correspondence.

⁹ Hyperindustrial society, one supposedly based on scientific technology and higher education, seems to still be predicated on the exploitation of a significant proportion of its working population.

¹⁰ In accordance with Wallerstein and other world-systems theorists, it could well be that the recent growth of globalization has allowed capital to exploit labor on a world-wide scale, thus allowing for a larger proportion of elite and middle classes in some core countries, and a significant pool of degraded labor in peripheral and semi-peripheral countries.

¹¹ In the latter case, only the location of the exploitation of workers has changed. Sweatshops in third world countries, where workers are compensated pennies on the dollar and environmental and worker safety laws are minimal, now are the basis of profit of many companies.

¹² From 1983 to 2001 the total labor force grew from 100,834,000 to 135,073,000, or by 34%. In that same time period, the growth of the Manager and Professional Specialty categories grew from 23,592,000 to 41,894,000 or by 77%.

¹³ Again, these figures are rough estimates only. There are, of course, some people excluded from the estimate that should be included, and others who are included that should not be there. Also, it should be pointed out, this middle stratum includes some self-employed workers who would be more akin to the older middle class. In 2001 self-employed "Managerial and professional specialty" as well as "Technical, sales, and administrative support" numbered about 5 million. The absolute numbers of self-employed in these two categories have been remarkably stable since 1990.

¹⁴ It is interesting that the new computer specialties should account for the bulk of the growth in technical expertise in the last 20 to 30 years. The application of computing technology to factory and office is widely credited with a tremendous boost in productivity. Computerization is a tremendous aid in extending the reach of supervisory personnel as well as the professional; a tremendous aid in precision technology as well as in the routinization of tasks. Millions have lost jobs (or never been hired) due to the increasing application of computer technology to the office and the factory. Millions more in other occupations have had their skill requirements lowered because of the application of this technology--and consequently their pay. For all this, the real technical

expertise of the computer industry is in the hands of about 2.75 million computer scientists and programmers, or about 2% of the total labor force.