

Manuel Castells and Historical Materialism

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Considering the very large volume of work produced by Castells, the relative scarcity of secondary literature discussing his theories is somewhat surprising. Castells does not really try to situate his theories about the network society in relation to Marxism. The argument of this paper is that Castells provides a plausible account of some major features of the means of production in the contemporary phase of capitalism, and also of the effects of this on society more generally. His theories could form the basis of an academically respectable version of historical materialism. Some problems with his theories are discussed.

Keywords: Marxism; Castells; Informationalism; Historical Materialism; Internet

Introduction

Castells started as a political exile from Franco's Spain but soon sprang to fame as a lecturer in Paris specializing in urban issues. At the beginning of his career he undoubtedly adopted a version of Althusserian Marxism, and was dismissed from his post at Paris X University, Nanterre for his role in the events of May 1968 (Castells, 1977, 1972). He was then employed instead at the École des Hautes Études en Sciences Sociales, and 1979 became a professor at the University of Berkeley, California. He has recently moved to the University of Catalonia. The high point of his theoretical trajectory and 25 books is undoubtedly the trilogy: *The Information Age: Economy, Society and Culture* (Castells, 1996, 2004, 2000).

Castells undoubtedly started from a Marxist framework, but he now does not claim that his approach is Marxist, and does not particularly try to draw Marxist conclusions from it. However, the central logic of his approach is to link a change in the mode of production to widespread general change in society, which is a distinctively Marxist way to look at things. His basic idea is that in the last 30 years or so of the 20th century there was a fundamental shift in the way in which the capitalist mode of production operates. The new social structure he terms informationalism (Castells, 1996) In the industrial mode of development the main source of productivity lies in introducing new energy sources or using them in different places. In the informational mode of development the source of productivity lies in knowledge generation, processing and communication. Information processing is focused on improving the technology of information processing. There the chief aim is the production of knowledge (Castells, 1996, p. 17).

Informational capitalism has two fundamental distinctive features: it is global, and it is structured to a large extent around a network of financial flows. Capital works globally as a unit in real time (Castells, 1996, p. 471). "Financial capital needs... for

its operation...knowledge and information generated and enhanced by information technology. This is the concrete meaning of the articulation between the capitalist mode of production and the informational mode of development" (Castells, 1996, p. 472).

This new form of society is based on networks. "Networks are the fundamental stuff of which new organizations are and will be made" (Castells, 1996, p. 168). The networked enterprise is: "that specific form of enterprise whose system of means is constituted by the intersection of segments of autonomous systems of goals" (Castells, 1996 p. 171). "The network enterprise makes material the culture of the informational/global economy: it transformed signals into commodities by processing knowledge" (Castells, 1996, p. 172). "My hypothesis is that, as the process of globalisation progresses, organizational forms evolve from *multinational enterprises* to *international networks*" (Castells, 1996, p. 192). Information-processing is central to the new configuration of the mode of production:

Computer software, video production, microelectronics design, biotechnology based agriculture, and so on, and many other critical processes characteristic of advanced economies, merge inextricably the informational content with the material support of the product, which makes it impossible to distinguish the boundaries between "goods" and "services" (Castells, 1996, p. 205).

Who are the capitalists in this new set up? Not the legal owners of the means of production. Some actors at the top of this global capitalist system are indeed managers, as with Japanese corporations. Others could be identified under the traditional category of the bourgeoisie as in the overseas Chinese business networks. In United States there is a mixture of traditional bankers, nouveau riche speculators, self-made geniuses turned entrepreneurs, global tycoons and multinational managers.

Some public corporations are capitalist actors. In Russia we have the survivors of the communist nomenclatura competing with wild young capitalists. “And all over the world, money-laundering from miscellaneous criminal businesses flows towards this mother of all accumulations that is the global financial network” (Castells, 1996, p. 473). There is not a global capitalist class, but there is an integrated global capital network. “While capitalism still rules, capitalists are randomly incarnated, and the capitalist classes are restricted to specific areas of the world where they prosper as appendixes to a mighty whirlwind which manifests its will by spread points and futures options ratings in the global flashes of computer screens” (Castells, 1996, p. 474).

Castells sees this new economy as inimical to organized labor, and says relatively little about a working class response to the changed situation: “Under the conditions of the network society, capital is globally coordinated, Labor is individualized. The struggle between diverse capitalists and miscellaneous working classes is subsumed into the more fundamental opposition between the bare logic of capital flows and the cultural values of human experience” (Castells, 1996, p. 476).

The central role of information processing in the new development of the capitalist mode of production makes it possible for money to be shifted around the world with extreme rapidity and also for technology and manufacturing to move between states and to be coordinated at a distance. What is developing is no less than a global economy: “A global economy is... an economy with the capacity to work as a unit in real time on a planetary scale (Castells’ emphasis)” (Castells, 1996, p. 92). An illustration of this development is that the share of trans-border financial flows for major market economies increased by a factor of about 10 in 1980-1992 (Castells, 1996, p. 93).

Castells acknowledges that the economy is not yet fully global:

Markets, even for strategic industries and major firms, are still far away from being fully integrated; capital flows are restricted by currency and banking regulations (although the offshoring of financial centers and the prevalence of computer transactions tend to increasingly circumvent such regulations); the mobility of labor is undermined by immigration controls and people’s xenophobia (Castells, 1996, p. 97).

In order to seriously come to terms with Castells’ analysis, it would be necessary to get to grips with his use of the term “network”. It makes sense for rapid computerized exchanges of information as part of financial dealings or of dispersed manufacturing and design across the globe or of lateral exchanges of information and ideas between people at the same level in different enterprises. There is also nothing wrong with arguing that the core of the global economy is located in the USA, Japan and Western Europe; although with the rise of China and India this will doubtless change. But to describe this triadic dominance as a “network” seems inappropriate. However, Castells is much more plausible when he claims that this new economic pattern based on information is having enormous effects on advanced societies, what would have been described as Third World countries, played a major role in the fall of the Soviet Union, and is linked to substantial changes in class structure, the decline of the patriarchal family, the role of politics and the media, the form taken by social movements and new opportunities for organized crime.

Many of the developments since 1970 that Castells is analyzing have featured in the work of other writers, and are fre-

quently described as a shift from Fordism to post Fordism, or as the ineluctable rise of globalisation. Many other writers give an account of globalisation which incorporates substantial outsourcing, rapid financial flows, increased inequality within the advanced countries matched by increased global inequality, power exerted over thousands of people in one continent by decisions made in another, the triumph of neoliberalism (Held & McGrew, 2001, p. 4; McGrew, 1997, p. 8; Giddens, Jameson, & Wallerstein, quoted in Beynon & Dunkerley, 2000; Gill, 1995, p. 406). To some extent this type of description can be regarded as an empirical account of changes. The interesting feature of Castells’ work is that the central mechanism of the change is a technological one, i.e. the development of information technology. How does this link with historical materialism?

I have argued elsewhere that several interpretations of historical materialism are possible. The version that makes the best link with Castells, and which has good links to many appropriate places in Marx, is technological determinism, most ably defended in the work of Jerry Cohen (Cohen, 1978). Cohen’s account is a subtle and well-argued elaboration of the famous quotation from Marx’s *The Poverty of Philosophy*: “[t]he hand-mill gives you society with the feudal lord, the steam-mill, society with the industrial capitalist” (Marx & Engels 1975, Volume 6, p. 167 the 50 volume Marx and Engels Collected Works, which will henceforth be abridged to MECW.). A number of other interpretations are possible, however. These are briefly described below. For the purposes of the present discussion I want to take Cohen’s interpretation as the starting point. I provide a very brief exposition and critique of the other approaches, with a view to demonstrating that Cohen’s approach, whilst by no means perfect, provides us with both a very plausible account of Marx, and a theory that can be applied to the real world of today. The other interpretations are less good in both respects. One particular problem with the interpretations which I shall be discussing below is that they make no direct reference to state action, but various forms of state action have been very important in advancing informationalism. It is now necessary to continue with a brief exposition of more of Castells’ ideas.

The Effects of the Rise of Informationalism in the Advanced Countries

There are very strong differences between the occupational structures of societies equally entitled to be considered as informational. Japan and the United States represent the opposite ends of the comparison although in all the advanced societies theory is a “Common trend toward the increase of the relative weight of the most clearly informational occupations (managers, professionals, and technicians)” (Castells, 1996, pp. 217-218). Crudely there are two informational models: the service economy model represented by the United States, UK and Canada with a rapid phasing out of manufacturing employment after 1970 and with an emphasis on capital management services; and the industrial production model represented by Japan and largely by Germany which reduces the share of manufacturing employment but continues to keep it at a relatively high level. Producer services are much more important than financial services in this model (Castells, 1996, p. 229).

Skilled workers in the North greatly benefited from global trade because they took advantage of the higher economic

growth and the international division of labor gave their firms a comparative advantage. Unskilled workers in the North suffered considerably because of competition with producers in low-cost areas (Castells, 1996 p. 227). High unemployment is not an inevitable consequence of informationalism; it is mainly a European problem caused by state policies. In the Asian Pacific overall employment has expanded substantially (Castells, 1996, p. 257).

Although the above is true at the global level, the consequences for particular people in particular countries may be dramatic. "The emergence of lean production methods goes hand-in-hand with widespread business practices of subcontracting, outsourcing, off shoring, consulting, downsizing, and customizing." The social costs of labour flexibility which this precipitates can be high, but on the whole there are improved family relationships and greater egalitarian patterns between genders (Castells, 1996, p. 265). The ramifications of informationalism are accelerating the decline of the patriarchal family, which is now a minority form (Castells, 1996, pp. 196-281). The direct consequence of economic restructuring in United States is that in the 1980s and 1990s family income has plummeted. Wages and living conditions continued to decline in the 1990s in spite of a strong economic recovery in 1993 (Castells, 1996, p. 264). By the early 1990s the top 1% of the population owned 40% of all assets, double what it had been in the mid-1970s, and at the level of the late 1920s, before progressive taxation (Castells, 1996, p. 275). The ratio of total chief executive officer to total worker pay declined from 44.8 times for 1973 to 172.5 times more in 1995. Some 80% of American households saw their share in national income decline from 1977 to 1999 by about 6% (Castells, 1996, p. 130). The Gini coefficient rose from .4 in 1967 to 2.45 in 1995 (Castells, 1996, p. 132). Poverty has increased. The percentage of persons with income below the poverty line increased from 11.1% in 1973 to 13.3% in 1997. Some 14.6 million Americans in 1991 had an income below 50% of the poverty level. Basically the informational economy and globalisation has caused this (Castells, 1996, pp. 134-135). In 1999 the new economy comprised 19 million workers while the old economy employed 91 million workers. Education had become a critical resource. In 1979 the average college graduate earned 38% more than the average high school graduate, but in 1999 the difference was 71% (Cohen, 1996, p. 136). In 1999 only 13.9% of the American labour force was unionized (Cohen, 1996, p. 137) - 12% in 2006 according to Bureau of Labor Statistics—see Center for Economic and Policy Research:

http://www.cepr.net/index.php?option=com_content&task=view&id=1019&Itemid=138

The change to an informational economy has put a downward pressure on welfare states. Because firms can relocate freely there follows "the downward spiral of social costs competition". In the past the limits to this have been the productivity and quality gap between protected workers from the advanced economies and less developed competitors and the role of protectionism. Both of these are withering away, pushed onwards by the World Trade Organization (Castells, 2000, p. 313) Mexican workers' productivity in automobile factories lags only about 18 months behind that of American workers. Now there are similar trends in Asia. American labour productivity is still the highest in the world (Castells, 2000, p. 314). Castells says that in a world where economies are increasingly integrated "there seems to be little room for vastly different

welfare states, with relatively similar levels of labour productivity and production quality." A global social contract would be required to preserve the better welfare states, but in the liberalized, network, global economy this is very unlikely and welfare states are being downsized to the lowest common denominator. Finland has been an exception to this (Castells, 2000, p. 314). To survive in a globalized economy the welfare state needs to be connected to productivity growth in a virtuous circle by a feedback loop between social investment and economic growth (Castells, 2000, p. 315, Castells & Himann, 2004).

The new economy generates new forms of social exclusion, notably of black Americans. Castells argues that there are what he calls "black holes" of the informational economy: "The fourth world has emerged, made up of multiple black holes of social exclusion throughout the planet... It is inseparable from the rise of informational global capitalism (Castells, 2000, p. 160)." Black Americans have problems of unemployment because they are reluctant to undertake menial labour. In turn this links to a higher rate of illegitimacy and a tendency for the breakdown of family life (Castells, 2000, pp. 143, 146). Very many black males end up in prison. In 1996 there were 600 prison inmates in United States per 100,000 residents, a rate which had doubled in about 10 years (Castells, 2000, p. 148). 53% of these were black. Blacks were 40% of death row inmates. This is largely due to discrimination in sentencing rather than because of the frequency of crimes (Castells, 2000, p. 150).

The Fall of the Soviet Union

Castells describes the Soviet system as statism, and argues that the crisis of Soviet society from the mid-1970s onwards was the expression of the structural inability of statism to ensure the transition towards the information society (Castells 2000, p. 8). Statism worked well in an industrial society. In the 1950s until the late 1960s and the Soviet Union generally grew faster than most of the world. The annual growth of Soviet national income was 7.2% from 1950 to 1960. It was 4.1% 1965 to 1970, 3.2% 1970-1975, then something close to stagnation settled in. (Castells, 2000, p. 10). This is because the Soviet Union missed the revolution in information technologies that took shape in the world in the 1970s (Castells, p. 26). There was a situation close to parity in computer design in the early 1960s but by the 1990s there was a 20-year difference in design and manufacturing capability (Castells, 2000, p. 30). In the USSR typewriters were rare, carefully monitored devices; two signatures were required for access to a photocopier, or three for a non-Russian text. There were special procedures for using long-distance telephone lines. The notion of a personal computer was objectively subversive (Castells, 2000, p. 36).

Castells does not say this, but there is good reason to think that the fall of the Soviet Union is responsible for several of the well-known features of globalisation. The Soviet Union functioned as a counterweight to the capitalist West and as a sort of welfare state for Third World countries, offering them an alternative pattern of development and source of help. The demise of the Soviet Union has left us with a single superpower. The challenge to neoliberal globalisation now rests with an assortment of relatively small and powerless social movements. The rampant growth in inequality, both within advanced states and between the advanced states and others, which has characterized the period since about 1980, would have been much more

subject to challenge if there had been an alternative ideology and power base.

Marginalization of Sub-Saharan Africa

Developing countries which have the political capacity to develop an infrastructure which can take advantage of the informational economy can advance very quickly. Those which cannot are destined to languish (Castells, 1996, p. 105). Liberalization policies in Africa didn't attract investment or improve competitiveness, but destroyed large sectors of agricultural production for local markets and in some cases subsistence agriculture. The struggle for the control of the state became a matter of survival. Tribal and ethnic networks were the safest bet for support. The struggle to control the state was organized around ethnic cleavages leading towards genocide and banditry. This is rooted in "the political economy of Africa's disconnection from the new, global economy." The new global economy does not have much of a role for the African population. Primary commodities are useless or low-priced, markets are too narrow, investment too risky, labour is not skilled enough, communication and telecommunication infrastructure clearly inadequate, politics too unpredictable, and government bureaucracies inefficiently corrupt (Castells, 1996, p. 105). The percentage of world trade to and from Africa roughly halved between 1980 and 1995; foreign direct investment, growing substantially elsewhere, is not attracted to Africa (Castells, 1996, pp. 83-90).

Africa is by far the least computerized region of the world, and does not have the minimum infrastructure to make use of computers. In 1991 there was one telephone line for a hundred people in Africa compared to 2.3 for all developing countries, and 37.2 for industrial countries (Castells, 2000, p. 92). Castells emphasizes the role of the developmental state in the rise of the Asian tiger economies. Africa has the reverse. As Colin Leys puts it: "few theorists of any of these persuasions [Marxists, dependency theorists] expected the postcolonial state of all ideological stripes to be corrupt, rapacious, insufficient, and unstable, as they have almost all been" (Castells, 2000, p. 96). It should be added that more recently conditions have become better in much of the African continent. Civil wars have ended, dictators have fallen, and economic development has somewhat advanced.

The Asian Tiger Economies and Japan

In dramatic contrast to the fate of sub-Saharan Africa, Castells provides a fascinating analysis of the rapid growth experienced in post-war Japan, the role of the state in four of the leading tiger economies of the Pacific-Singapore, South Korea, Taiwan and Hong Kong, and the prospects for continued rapid growth in China. He argues that there has been an important role for what he identifies as the developmental state. He also argues that the tiger economies experienced a crisis in the late 1990s in part because they needed to make the move from societies under the aegis of the developmental state to fully networked advanced economies (Castells, 2000, pp. 212-230).

Castells and Marxism

Enough of Castells' account of informational capitalism has been given to demonstrate that it could form the basis of a modernized version of historical materialism. It starts from

significant changes in the means of production which in turn have profoundly affected the working of the capitalist mode. Considerable work would be needed to analyse whether all the linkages along the way are satisfactory, and, as suggested above, Castells arguably operates with an unduly flexible concept of network. He does, however, manage to explain major and significant features of the development of capitalism over the last 40 years on a global basis. Not surprisingly, several difficult questions remain. The changes which Castells discusses have been accelerated in Britain and the United States by neoliberal politics, notably pursued by Reagan, Thatcher and Bush junior and senior, but also pursued in a diluted form by Clinton and Blair. Are these figures simply going with the flow, or are they significantly accelerating it? President Obama has a clear commitment to curb some of the wilder excesses of US capitalism and to develop universal health care, both of which policies involve restraining features of the informational economy. These policies should be much more difficult to implement than their neoliberal predecessors. What should be said about the rise in spending on education and the NHS under New Labour? What about the various measures being taken by governments to rein in bankers in the wake of the credit crunch? To what extent can states and other actors mitigate the anti-egalitarian features of informational capitalism? To what extent can they resist the tendency of their economies to export jobs to China, India and other countries offering advanced facilities and cheap labour? Growth has generally been fairly steady in Germany, which suggests it is possible to buck the neoliberal trend. Is it fair to say that Castells provides us with a satisfactory version of historical materialism which explains some very general tendencies in capitalism, but that one would expect any explanation at this level of generality to have quite a number of exceptions?

In order to get to grips with this question, the obvious starting point is to review previous interpretations of historical materialism. There are at least six of these, as can be seen from what follows (Cowling & Manners, 1992, pp. 9-29). As I indicated above, the best of these is technological determinism.

The idea of technological determinism as a way of making sense of Marx's theory of history is best developed by Cohen (Cohen, 1978). It did not, of course, start with Cohen. There are some obvious passages in Marx which point in this direction. Two of the most famous are:

The hand-mill gives you society with the feudal lord, the steam-mill, society with the industrial capitalist (MECW, Volume 6, p. 167)

No social order is ever destroyed before all the productive forces for which it is sufficient have been developed, and new superior relations of production never replace older ones before the material conditions for their existence have matured within the framework of the old society' (Preface).

Cohen's version of technological determinism builds on passages of this sort. He attempts to establish an account of productive relations which does not involve legal terms, by re-describing the apparently-legal aspects of production relations in terms of powers, which may be supported by law, but which are by no means identical with it. He also offers an account of the way the productive forces determine the economic structure and the economic structure determines the superstructure in terms of functionalist explanation: stability requires a legal expression of production relations. The rest of this volume is concerned with the further pursuit of these ideas. It should be pointed out here that although I have described Cohen as a technological

determinist, he does not use this term as a self-description. Nonetheless, the general approach he adopts has usually been seen, I believe rightly, as technological determinism, and his own programmatic statements do not undermine my view of him. In the preface to *Karl Marx's Theory of History: A Defense* he says of his own approach:

... it is an old-fashioned historical materialism which I defend, a traditional conception in which history is fundamentally, the growth of human productive power, and forms of society rise and fall according as they enable or impede that growth (Cohen, 1978, p. x).

His main reason for avoiding the term seems to be a reluctance to accept possible connotations of "determinism", although Cohen's views about the causal mechanisms of historical materialism are clear. He says of his version of historical materialism that it "may be called technological, but the issue of determinism will not be discussed" (Cohen, 1978, p. 147f).

This is a particularly well elaborated account, and the description of the other possibilities will be much briefer.

One of these is economic determinism, as propounded by Richard Miller and William Shaw (Shaw, 1978, p. 72; Miller, 1984, pp. 8-9). In this version the idea is that the economy determines other areas of society, but there is no particular account of the relationship between the forces and the relations of production. This interpretation may be regarded as having certain advantages over Cohen's theory: it specifies the mechanisms by which the development of the productive forces translate into effective class action (a "motive" of more efficient production, and the means to achieve it through an increasing economic power base); it allows for stagnation due to revolutionary failure, because the condition of a stable mode of production is the ruling class's economic dominance and not its ability to promote productivity; and it does not demand that a new mode of production be optimal for the development of the forces of production. However, the distinction between the economic base and the superstructure is not at all clear in this interpretation.

Another possibility is an interpretation where the relations of production are seen as determining the economic base and also the superstructure. It is associated with Althusser at one stage and also Hindess and Hirst at one stage (Althusser & Balibar 1970; Cutler, Hindess, & Hirst, 1975). Two particularly useful ideas are developed within this perspective. One is that a mode of production requires for its reproduction various preconditions, such as the reproduction of the laborers or an appropriate legal framework (Balibar in Althusser Balibar, 1970, pp. 2585-2589). The other is the identification of transition with the transformation of the forces of production by the relations of production.

A further interpretation, which probably actually departs from Marxism is skepticism. Marx is seen as alternating unsatisfactorily between advocating a theory of history which gives an account valid for all societies and allowing the validity of exceptions. This leads to the view that any idea of economic determination should be abandoned (Cutler, Hindess, Hirst, & Hussain, 1970, Volume 1).

A yet further interpretation could be called class unitarianism. This approach is particularly associated with historians such as Hobsbawm, Hilton, Hill, and Thompson. The basic idea is that that social and historical determination resides precisely in a concrete and all-encompassing *unitary class experience*. Most importantly, there is the unfavorable comparison with the base/

superstructure model which posits the economy as the determinative basis of class as well as of society, and thereby justifies the centrality of class analysis; by contrast, in unitarian theory class is the determinative basis of society, but there is no justification for this determination, only the sporadic and subjective self-consciousness of class members and an empiricist intuition of the objectivity of class existence. Despite its appeal for historians whose task it is to apply the general principles of historical materialism to an analysis of concrete history, this theoretical paradox severely undermines the class unitarian approach.

Moving on, there is an interpretation based on the idea of praxis (Jakubowski, 1990, p. 37; Gramsci, 1971, p. 372). This approach emphasises that history is determined by conscious and creative human activity. Despite its association with Antonio Gramsci, this approach suffers from a considerable degree of vagueness. It leads Gramsci in the direction of relativism and idealism.

Finally we come to the idea of an organic totality (Rader, 1979). This approach which is developed by Melvin Rader and Bertell Ollman emphasizes that Marx's central concepts are importantly internally related, citing the problem that science, law and property belong to both the base and the superstructure (Rader, 1979, pp. 119-120). I do not consider that Marx's concepts are as tightly internally related as this approach suggests. It is also not entirely clear where it leads. Thinking about a human organism, we can easily do without hair; people can manage without feet, although life becomes much more difficult. Readers may like to continue with this grisly conceptual experiment and then see if it can be applied to society. It seems to me that the overall result is relatively vague.

The most plausible way of linking Castells and historical materialism can be developed from the Cohen approach outlined above. The advance from one mode of production to another occurs partly because the discarded mode of production has started to act as a fetter on the forces of production, and partly because a revolutionary class is committed to introducing a new mode of production. Castells considers that the informational mode of production divides and weakens the working class to the extent that he does not really use this term. He therefore has virtually nothing to say about class struggle. However, this plainly remains an aspect of economic and political life in both advanced and developing countries. It is not the informational economy on its own which is opposing health reforms in the United States; there is a right wing coalition involving parts of the Republican Party and those with an economic interest in preserving the status quo.

Again, there is presumably some flexibility in the way an informational economy operates. Consider the above discussion of the way in which black American males are socially excluded and imprisoned at a rate much higher than appears warranted by their numbers in the population or their behaviour. It does not seem to me impossible that the harm reduction approach to drugs which is currently implemented in various forms in Switzerland, Holland, Portugal and increasingly in some Latin American countries, might spread to the United States. If this was matched with a determination to make better use of African American males, there is surely no overwhelming interest in maintaining the current very high rates of imprisonment. Other countries which have survived the move to an informational economy tolerably well manage with much lower rates of imprisonment.

Although there is doubtless some flexibility in a world characterized by informational capitalism, it needs to be recognized that the forces of production are currently developing extremely rapidly, so it is not realistic to expect massive proletarian discontent at capitalist stagnation. This can be seen in relation to the current situation in regard to the so-called declining rate of profit. Marx argues that as capitalism develops each worker is matched by an increasing mass of machinery. This means that the value of the machinery outstrips that of the workers' wages, but according to the labour theory of value the sole source of value is labour. The rate of profit therefore tends to decline over time. Although this looks plausible when one thinks about each worker typically being linked to an increasing quantity of machinery, the relevant issue is the relative *value* of the machinery. The role of computers over the last 50 years or so illustrates this point dramatically. Back in the 1960s computers were so expensive that it was felt necessary to operate them 24 hours a day. This is not now necessary. The most commonly quoted way of expressing this advance is Moore's Law, which states that the number of transistors on an integrated circuit will double every 18 months, and which also translates into a rapid advance in computing power per unit cost (Wikipedia, Moore's law). The cost of hard drive space per megabyte fell from \$10,000 US in 1956 to about one cent by the year 2000, and has continued to fall rapidly since that time (<http://www.littletechshoppe.com/ns1625/winchest.html>). This rapid fall in the cost of computing power has also reduced the cost and enhanced the efficiency of a wide variety of machinery used in production. Thus the common sense idea of the increased role of machinery leading to a falling rate of profit has not merely a logical flaw, but has also dramatically failed to work in the real world for the last 50 years or so. Obviously, along with this has gone a spectacular development of computer applications. One tiny example amongst many is the development of voice dictation to computers, which now works quite well but which would have been entirely impossible using the most powerful desktop computers of 25 years ago. I started doing word processing in the 1980s using the university's mainframe computer, which had 2.8 MB of RAM. My desktop computer now has 16 GB of RAM. The application of computers to production, together with the developing capacities of China and India, have led to a dramatic cheapening of all kinds of products. This in turn must be at least part of the explanation for the relative quiescence of working people.

Marx's account of historical materialism is, of course, linked to the idea of socialist revolution. What sort of socialist politics can be pursued in a globalizing world of informational capitalism? Traditional Communist politics, meaning political strategies intended to introduce an economy and system of government similar to that in the former Soviet Union, looks particularly unattractive. To go through all the pain and bloodshed involved in revolution, likely intervention, and isolation in order to produce a system which cannot keep up with informational capitalism and which is likely to collapse does not make any sense. Similarly, strategies based on social democracy but which put the accent on changes within a nation state and which aim to secure a substantial degree of isolation from the global economy such as the Alternative Economic Strategy advocated in Britain by the Labour left in the 1980s do not look at all promising. There are plainly benefits from, for example, trade with China or the export of technologically advanced products such as pharmaceuticals which would be jeopardized

by such an approach. Moreover, as Castells points out, people who make their living through working in the advanced countries are becoming increasingly divided between skilled and unskilled labour. These divisions amongst working people are fairly slight compared to the gap between low pay or welfare benefits in the advanced countries and rates of low skilled pay in countries such as China and India. Thus it is certainly a scandal that the chief executive of Wal-Mart is paid 871 times as much per hour as the \$9.68 average hourly pay of US Wal-Mart employees, and even more of a scandal that he gets about 50,000 times as much per hour as garment workers in China and Bangladesh working for Wal-Mart subcontractors on \$0.17 per hour. However, this still leaves a gap between the notoriously underpaid US Wal-Mart employees and the Chinese garment workers such that the Wal-Mart workers are paid about 57 times as much as the Chinese workers (Anderson, 2005 at: http://www.ips-dc.org/projects/global_econ/Wal-mart_pay_gap.pdf 2005). This is a bigger gap than that between average chief executive pay and average pay of workers in the United States in 1973, when chief executives earned 44 times as much as workers. The gap between capitalists and workers is not, of course, normally expressed as a gap in pay, but the gap in pay would certainly be part of the reason that workers and chief executives would be assigned to different classes. Even if one focuses on minimum wage Wal-Mart employees and assumes that these are particularly unlucky Chinese workers who could be paid double what they are getting if they moved to a better employer there is still a massive gap.

If we can talk about a global proletariat it is plainly a very divided one. Some sort of worldwide Trotskyist revolution looks just as unlikely as its Stalinist rival. Actions to produce rough equality between workers in the Third World and those in advanced countries are likely to be resisted by the latter. On the other hand there is at least a degree of common interest on a range of issues: reasonable working conditions including both hours and health and safety, at least a minimum level of welfare state provisions, corporate responsibility and transparency, being able to join an independent trade union, some degree of protection for the environment and the avoidance of global warming. The interests of working people worldwide are not served by imperialist adventures such as the recent American and British occupation of Iraq. If Chinese and Indian growth rates continue to be close to double digits while those in the advanced countries are more modest the gap between wages should lessen over time. In the meanwhile there is scope for trade union and political lobbying to try to bring about minimum standards. A contemporary example would be the January 2007 lobbying of the World Economic Forum in Davos by trade union leaders seeking corporate responsibility. (See: <http://www.ituc-csi.org/spip.php?article604>). There is also a role for non-governmental organizations such as those involved in the campaign to Make Poverty History (Castells, 2004, p. 331). Some of what are generally seen as anti-globalisation protesters have objectives which are fully compatible with a socialist agenda. None of this is as inspiring as the revolution predicted and strived for by Marx, but it does suggest that socialism is not entirely dead. There is some scope for socialist initiatives which are going with the grain of history.

Conclusion

Although his theories need considerable further development,

Castells offers an account of contemporary reality which is highly plausible. Cohen's interpretation of historical materialism provides a plausible account of Marx which is also capable of being applied to developments in the real world. The above article demonstrates that it can be linked to the ideas of Castells. What emerges is a plausible account of the real world which can be linked to historical materialism. It also links well with much contemporary writing on globalisation. Marx is by no means entirely vindicated; in particular, his account of socialist revolution, which is linked to historical materialism, does not currently look plausible in its original form. However, the overall picture which emerges is a surprisingly respectable version of historical materialism.

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