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Massimo Di Matteo Richard M. Goodwin
Alessandro Vercelli (Eds.)

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CUSTOM AND INNOVATION:
LONG WAVES AND STAGES OF CAPITALIST DEVELOPMENT

Giovanni Arrighi
Department of Sociology
State University of New York at Binghamton

Long waves are primarily a reflection of the temporal unevenness of competitive processes in the capitalist world-economy. Borrowing freely from Schumpeter, I shall assume that the intensity of competition in a capitalist economy varies over time according to the ever-changing balance between the forces of custom and the forces of innovation. Like all previous social systems, capitalism rests on some kind of customary order in which social, economic, and political actors develop and behave according to rules and norms that ensure the continuity of the "circular flow of economic life." But unlike all previous social systems, capitalism tends to generate innovations that break up whatever customary order has been, or is being, established at any given time. This tendency heightens competitive pressures which, in turn, call forth new customary orders.

The alternation of intensifying and dampening competitive pressures is what long waves of "prosperity" and "depression" are about. The purpose of this paper is not to demonstrate that this conceptualization captures the spirit if not the letter of Schumpeter's view of long waves. The purpose is to expand and reformulate the above conceptualization to take into account tendencies of the capitalist world-economy, which Schumpeter overlooked or purposefully ignored, but which have played a crucial role in shaping the long waves of the last two hundred years.

I

Economic innovations cluster in time mainly because they do not occur in a social void.⁽¹⁾ They have to overcome the resistance of customs rooted in the quest for security that in different ways charac-

(1) The following conceptualization of long waves presents some analogies with that of Gordon (1980) and Gordon, Weisskopf and Bowles (1983), with O'Connor's (1984) theory of accumulation, and with the theory of "regulation" of Aglietta (1979), Boyer and Mistral (1978), and Lipietz (1986). None of these works, however, takes the world-economy over four long waves as the unit of analysis, as is done here.

terizes states, households and enterprises. Under "full capitalism", these institutions came to perform specialized functions in relation to one another: states specialized in providing households and enterprises with protection; households specialized in providing states and enterprises with labor power; and enterprises specialized in providing states with means of protection and households with means of livelihood.² Moreover, enterprises provide each other with the means necessary to produce means of protection and means of livelihood.

Every institution's "inputs" are some other institution's "outputs" so that the protection-producing activities of states, the livelihood-producing activities of households, and the commodity-producing activities of enterprises constitute a web of interdependent actions. Within this wider web, the input-output relations among enterprises constitute a smaller if tighter web which we shall refer to as the Interenterprise System. By Interstate System, in contrast, we shall refer to the set of relations through which states define each other's sovereignty.³

Owing to this overall interdependence, we can assume both on a priori and on historical grounds that all actors involved have a propensity to establish rules and norms of interaction that minimize the chances of major interruptions in the circular flow of economic life. These customary arrangements constrain competition and rely on considerations of substantive economic rationality to ensure the cooperation necessary to reproduce livelihood and protection.

This tendency to generate customary orders is what capitalism has in common with all previous (and presumably future) social systems. What differentiates capitalism from all previous social systems is the intermediation of capitalist enterprises in the provision of livelihood and protection. As commodity producers, capitalist enterprises are just as keen as states and households in establishing customary arrangements that ensure stability of operations. As we all know, a major activity of most enterprises is the setting up of networks of customers (and

(2) The distinction between "early," "full," and "late capitalism" used throughout the paper is based on Sombart (1959). On states as protection-producing enterprises see Lane (1979) and Tilly (1985).

(3) On the concept of "interstate system" see Hopkins and Wallerstein (1977) and Wallerstein (1984). The concept of "interenterprise system" (but not the designation) is taken from Veblen (1978). It is analogous to Hopkins and Wallerstein's concept of "commodity chain." The main difference is that the nodes of commodity chains are "economic activities," whereas the nodes of the Interenterprise System are economic enterprises.

contractors in a broad sense) who will routinely purchase outputs (and supply inputs) at more or less given prices and in more or less given quantities. Without some stable network of this kind, no capitalist enterprise could survive for any length of time.

As loci of capitalist accumulation, however, capitalist enterprises are continuously engaged in uncovering the hidden profit-making potentialities of new input-output combinations. What matters most to each capitalist enterprise is not its absolute but its relative level of accumulation--relative, that is, to the level of accumulation of other capitalist enterprises. If the level of accumulation of an enterprise (or group of enterprises) x falls regularly behind the level of accumulation of other enterprises (or groups of enterprises) y and z , the chances of future survival of x decrease correspondingly, even if y and z do not compete directly with x for outlets and supplies. The quest for future, as opposed to present, security thus induces each and every enterprise to seek, as an offensive or as a defensive weapon, new input-output combinations capable of raising its share of entrepreneurial incomes. This means that the competitive struggle among capitalist enterprises is eminently "positional" (Cf. Hirsch, 1976).

Even though capitalist enterprises are constantly engaged in seeking new input-output combinations capable of enhancing their position in the Interenterprise System, the actual introduction of such combinations and the ensuing struggle for entrepreneurial incomes occur in rushes. The A and B phases of long waves are phases of competitive struggles in the Interenterprise System: while in the A phases capitalist enterprises tend to stick to customary arrangements that buttress relations of cooperation and complementarity, in B phases they enter into struggles that bring into the open relations of competition and substitution.

Transitions from B to A phases can be accounted for by the fact that "excessive" competition sooner or later calls forth countervailing tendencies which, over time, crystallize in a new set of to-become customary arrangements. Transitions from A to B phases, in turn, can be accounted for by the fact that customary arrangements reflect truces in the competitive struggle but do not eliminate (and may actually enhance) the tendency for surpluses to accumulate unevenly among enterprises. Sooner or later, this uneven accumulation generates a new round of competition that progressively destroys the existing pattern of input-output relations and brings into existence new ones.

The destructive tendencies of the competitive struggle do not materialize immediately because the new input-output combinations for a

time coexist with, and even inject new vitality into, the previous patterns of input-output relations. As Schumpeter put it: "While these things are being initiated we have brisk expenditure and predominating 'prosperity' ... and while [they] are being completed and their results pour forth we have the elimination of antiquated elements of the industrial structure and predominating 'depression'" (154: 68).

More specifically, each round of the competitive struggle unfolds in three stages. In the first stage, the improvement in economic conditions that normally ensues from the establishment of more stable relations of cooperation and complementarity in the Interenterprise System tends to generate both the means and the incentive to introduce new input-output combinations. Those who are gaining from the uneven accumulation of entrepreneurial incomes seek new outlets for their capital, and those who are losing seek new ways of capturing additional cash flows. Innovations will thus be introduced partly as an offensive and partly as a defensive weapon. Whatever the motivation, the new combinations lead to secondary rounds of innovations as well as to greater demand for existing resources.

As a consequence, "prosperity" is further enhanced and the contradictions between the old pattern of input-output relations and the emerging one is concealed. The second stage begins (and the A phase turns into a B phase) when competition for resources between old and new combinations puts a squeeze on entrepreneurial incomes in general and induces all enterprises to resort to widespread rationalizations. In this stage, the "principle of substitution" comes into action in full force. Enterprises do all they can to move from overcrowded to undercrowded niches of the Interenterprise System and to "economize" as much as possible.

Two results follow. One is a redistribution of the initial gains of the wave of innovations. When the new input-output combinations are first introduced, their direct and indirect benefits are distributed largely at random. Even the innovators may not reap any of the initial benefits. Most of these benefits accrue to whoever happens to sit on the resources (labor, land, equipment, organizations) for which the new combinations create a demand. But when the pressures to "economize" and to "substitute" increase, the benefits are appropriated by the enterprises that have the greatest capabilities to "economize" and to "substitute" and to do so promptly--enterprises that may or may not include the innovators.

The second result is that the enterprises that are structurally or behaviorally less capable of substituting and economizing are either

eliminated from the struggle or subordinated to the enterprises that are more capable of substituting and economizing. As this happens we enter the third stage. Just as the setting up of new combinations had enhanced the "prosperity" of the A phase, so now the dismantling of existing combinations deepens the "depression" of the B phase. And just as the setting up of new combinations tended to cumulate, so does the dismantling of old combinations.

The third stage of the competitive struggle comes to an end (and the system enters a new A phase) when the survivors establish new customary arrangements that bring to a halt the disruptive effects of "excessive" competition. A new basis for cooperation in the Interenterprise System is created, the cumulative pattern forming the depression is reversed, and an upturn in economic activity and entrepreneurial incomes sets in. And in the course of time, the upturn generates the conditions for a new round of the competitive struggle.

II

The foregoing conceptualization of long waves tells us that B phases are periods of open struggle or "excessive" competition among capitalist enterprises, and A phases are periods of truce which prepare the next round of struggle. It does not tell us anything about the specific forms that struggles take. The form taken by competitive struggles depends on the historical context in which they unfold--a context that is only in part determined by interenterprise relations.

Relations among capitalist enterprises are themselves embedded in world-hegemonic structures, that is, in customary arrangements at the level of the Interstate System which ensure the continuity of the circular flow of economic life across state boundaries. These structures (like the customary arrangements of the Interenterprise System) are subject to broadly cyclical patterns of construction/destruction, but this cycle of the Interstate System has no simple relation with the cycles of competition of the Interenterprise System, as a brief sketch of the long waves of the last two hundred years will demonstrate.

The first two Kondratieffs (henceforth referred to as K's), of those considered here, were encompassed entirely by the period of British world-hegemony.⁽⁴⁾ In the course of the A phase of the first K

(4) The periodization of British and U.S. hegemony is derived from Arrighi (1983) and the periodization of long waves is taken from Screpanti (1984) with minor modifications.

(1787/90-1810/17), the clustering of the Industrial Revolution in Britain consolidated British leadership in the Interenterprise System; and in the B phase (1810/17-1844/51) "excessive" competition among British enterprises for primary inputs led to the establishment of Britain's Free-Trade System, i.e., of a new set of customary arrangements. The system strengthened relationships of cooperation and complementarity between Britain's industrial enterprises and the predominantly agrarian enterprises of the rest of the world. In this way, competitive pressures were dampened and the foundations were laid for the Transport Revolution of the second K.

If the first K is characterized by the consolidation of British leadership in the Interenterprise System (and by the establishment of arrangements in the Interstate System that reflected this leadership), the second K is characterized by a process of "catching up" with Britain's overall superiority in industrial production. In the A phase of 1844/51-1870/75, the Transport Revolution did not destroy but brought into full operation the relationships of cooperation and complementarity that linked British enterprises to the rest of the world. General "prosperity" was enhanced and the competitive aspects of the Revolution were concealed. These aspects came to the fore in the B phase of 1870/75-1890/96, when a new round of open struggle for outlets and primary inputs broke out on an unprecedented scale.

Like the previous round of excessive competition, this round gave rise to, and was superseded by, customary arrangements that constrained competition. Unlike the previous B phase, however, the late nineteenth-century B phase gave rise, not to a single set of arrangements capable of enforcing interenterprise cooperation on a world scale, but to a multiplicity of contradictory arrangements. Three main responses to the excessive competition of the B phase can be distinguished: the British, the German, and the American.

The British response consisted of an attempt to find a new basis on which relationships of cooperation/complementarity between a leading Britain and a world of followers could be restored. Having lost its leadership in industrial activities, Britain sought to strengthen its leading role in trade, finance, and the provision of global protection. This specialization in economic and political intermediation required both the preservation of a free-trade system and the consolidation of Britain's military control over the seas.

These two requirements clashed most directly and severely with the German response which tended to restrain competition in interenterprise relations by transferring it to interstate relations. This tendency had

two components, one internal and one external to the jurisdiction of the German state. The internal component consisted of state-backed, finance-capital-sponsored restrictions on competition through various forms of horizontal integration of capitalist enterprises. The necessary complement of this restrictive practice was an expansionist policy in the Interstate System, mainly because capitalist accumulation was made more dependent on the widening of the economic space over which state monopolistic power could be exercised. Taken together, the internal and the external components of the German response implied nothing short of a regression to the mercantilist practices of early capitalism.

The American response to the excessive competition of the late nineteenth-century B phase was neither free-tradist nor mercantilist. It tended to constrain competition through the "internalization" (and hence supersession) of the market, not by the state as in the mercantilist response, but by the capitalist enterprise itself. In the American response, the vertical integration of enterprises was far more important than horizontal integration, and the increase in the mass of profit (via an increase in throughput) was far more important than increases in the rate of profit via restrictive practices (see Chandler, 1977). The response was therefore expansionist at the very level of interenterprise relations, and all it required at the level of interstate relations was some "open door" arrangement that would guarantee the freedom of entry and protection of capitalist enterprises under as many state jurisdictions as possible.

This strategy was not free-tradist because it could tolerate, nay, presupposed a certain amount of protectionism in the state system. And it was not mercantilist because it could not tolerate (and aimed at breaking up) state-imposed restrictions on the freedom of capitalist enterprises to undertake any activity that would bring them closer to final consumers, on the one side, and to suppliers of primary inputs, on the other. These peculiarities of the American response were rooted in the Organizational Revolution that was reshaping interenterprise relations in the U.S. sooner and more extensively than anywhere else. The essential aspects of this Revolution were the establishment of managerial coordination over vertically integrated production processes, and the institutionalization of economic innovations within the organizational domain of the resulting multiunit enterprise. Taylorism, Fordism, and Consumerism were just particular aspects of these organizational changes.

As a consequence of the Organizational Revolution, American enter-

prises were taking a lead comparable to that taken by British enterprises one hundred years earlier as a consequence of the Industrial Revolution. British economic leadership, however, had developed in step with British domination in the Interstate System. The A phase of the Industrial Revolution was also the period of the final confrontation between France and Britain in the Napoleonic wars. In contrast, the A phase of the Organizational Revolution, far from witnessing the establishment of U.S. world hegemony, saw the Interstate System thrown into a state of complete anarchy by an escalating conflict between British free-tradism and German neo-mercantilism.

This lack of synchronization of cycles of hegemony and cycles of competition shows that power relations in the Interstate System are not a mere reflection of leadership in interenterprise relations. Owing to this disjuncture, the third Kondratieff was entirely dominated by world-hegemonic rivalries. In the A phase of 1890/96-1914/20, interenterprise competition was restrained in the three contradictory directions outlined above. However, "prosperity" was induced, not only by the restraints on competition (as in the previous A phase), but also by the expenditures associated with the escalation of conflict in interstate relations. The B phase assumed the peculiar form of "excessive" competition among states rather than among enterprises. The competitive struggle was fought by states rather than by enterprises, and the B phase assumed characteristics that were absent in previous B phases. An important peculiarity of this B phase, for example, was the complete absence of leadership in interstate monetary relations (see Kindleberger, 1973).

As it turned out, the wars and deep depressions that ensued from the conjuncture of the B phase with a phase of struggles for world hegemony further enhanced U.S. leadership in the Interenterprise System. Moreover, they transformed the U.S. from a secondary military power into a superpower, while showing the limits (and exhausting the sponsors) of free-tradist and neomercantilist responses to excessive competition in interenterprise relations. The conditions were thus created for the establishment of a new world-hegemony and the restoration of the circular flow of economic life across state jurisdictions.

Under U.S. hegemony, freedom to invest across state boundaries rather than free trade became the key customary arrangement regulating interenterprise competition; and the transnational expansion of the capitalist enterprise rather than imports and exports became the fundamental channel of that competition. The prosperity of the A phase of 1939/45-1967/73 was largely the result of these arrangements in

interstate relations and of the race to catch up with U.S. economic leadership. The so-called Information Revolution took off in this period and, initially, was instrumental in establishing or strengthening relations of cooperation and complementarity between U.S. corporations and the rest of the world-economy. But as soon as major clusters of enterprises (notably the Japanese and the Western European clusters) caught up with the organizational advantages of U.S. enterprises, as they did between 1967 and 1973, the competitive aspects of the Information Revolution came to the fore, and the world-economy was plunged into a new B phase.

The foregoing sketch of the four Kondratieffs of the last two hundred years has been summarized in Table I. In the table a

TABLE I

PERIOD	1789 1790	1810 1817	1844 1851	1870 1875	1890 1896	1914 1920	1934 1945	1967 1973	...
KONDRATIEFF	<----K1----->		<----K2----->		<----K3----->		<----K4----->		
POLITICAL LEADERSHIP	BRITISH----->					NONE----->	U.S.----->		
ECONOMIC LEADERSHIP	BRITISH----->					MULT----->	U.S.----->	MULT->	
EC. REV. primary:	INDUSTRIAL----->					ORGANIZATIONAL----->			
secondary:						TRANSPORT-->		INFORM.-->	

distinction is drawn between the two economic revolutions (the "Industrial" and the "Organizational") that have given rise (with or without a lag) to new world-hegemonic structures, on the one hand, and the two economic revolutions (the "Transport" and the "Information" revolutions) that have followed upon the establishment of world-hegemonic structures, on the other hand. The former revolutions are designated as "primary" because they established a new standard of coreness--that is to say, they established the leadership of a particular national cluster of enterprises and unleashed a race among other clusters to catch up with that standard. The latter revolutions, in contrast, are designated as "secondary" because they are a direct consequence of the primary revolutions, and are part and parcel of the process of catching up.

It follows that long waves differ from one another (a) according to the nature of the economic revolution that prompted the challenge-response sequence (First and Second K's vs. Third and Fourth K's) and (b) according to whether they are shaped by the emergence of a challenge

(First and third K's) or by a response to a challenge (Second and Fourth K's). Moreover, the response to a challenge, once successfully completed, may overflow into a struggle for world hegemony which endows the subsequent K with the peculiarity that the competitive struggle is fought out by states rather than by capitalist enterprises. This has been the case of the Third K but there are good reasons for not expecting the current downswing to have the same outcome (see Arrighi, 1982).

III

At this point the question arises of what is the origin of primary economic revolutions and whether these revolutions are linked to one another by some pattern of long-term evolution of the capitalist system. A good part of the answer can be found in the difficulties met by capitalist accumulation in expanding the command of the Interenterprise System over inputs which we shall call "primary" in one of two senses: in the sense that they are not produced ("land"), or in the sense that in their production capitalist enterprises have been unable, historically, to develop a lasting competitive advantage vis-a-vis states and households ("protection" and "labor").(5)

The problems encountered by capitalist enterprises in expanding their overall command over primary inputs can be stated in general terms as follows. The surplus of monetary means that accrues in any given period to the Interenterprise System once primary inputs have been paid for (in short, net entrepreneurial incomes) increases the nominal command of capitalist enterprises over the resources controlled by states and households. Nevertheless, this increase in nominal command does not necessarily involve an increase (proportional or otherwise) in the real or effective command over such resources. The greater nominal command in the hands of capitalist enterprises (or would-be capitalist enterprises) may simply lead to the bidding up of the terms at which they procure labor, land, and protection. Greater nominal command may thus leave effective command unchanged or even reduce it.

In section I it was emphasized that competition among capitalist enterprises is eminently positional: what matters most to each and

(5) "Land" is used here, as in classical economics, to designate whatever is used in production that cannot itself be produced. Land reclamation does not produce, but simply processes, "land" in this sense.

every capitalist enterprise is its share of total entrepreneurial incomes rather than the absolute level of such incomes. This does not mean that capitalist entrepreneurs, taken individually or collectively, can be indifferent to whether the effective command of the Interenterprise System as a whole over primary inputs increases or decreases. Other things being equal, if effective command increases, the "mortality rate" of capitalist enterprises is reduced and the zero-sum nature of interenterprise competition is diluted. Conversely, if effective command decreases, the competitive struggle turns into a negative-sum game and the mortality rate increases.

This is tantamount to saying that the overall intensity of competition among capitalist enterprises is inversely related to the intensity of competition among households and states qua buyers of final outputs and suppliers of primary inputs. If the recurrent intensification of competitive pressures, which is inherent to the functioning of the Interenterprise System, is not matched by a more or less proportional intensification of competitive pressures on the suppliers of primary inputs, the process of capitalist accumulation grinds to a halt. The command of capitalist enterprises over primary inputs contracts (or stagnates) instead of expanding, and the competitive struggle turns into a negative-sum game.

Historical capitalism seems to have faced three such situations. The first was typical of early capitalism; it was rooted in problems of "primary accumulation," and was eventually superseded by the Industrial Revolution and the establishment of British world hegemony. The second impasse was typical of full capitalism; it was rooted in problems of "commodification" and was eventually superseded by the Organizational Revolution and the establishment of U.S. world-hegemony. The third impasse is the one now being faced by late capitalism. It is rooted in problems of "overaccumulation," and is unlikely to be superseded by anything short of a major reorganization of the world-economy along non-capitalist lines.

A problem of primary accumulation arises when competition among states and households in supplying primary inputs is restrained by their self-sufficiency in the production of means of protection and of means of livelihood. Because of this self-sufficiency, the "sticking prices" at which households and states are prepared to supply labor, land, and protection in exchange for final outputs leave little or no room for the expansion of the effective command of capitalist enterprises over primary inputs.

In a situation of this kind, the competitive struggle induces

capitalist enterprises to perform functions, and to use means, typical of states and households. The distinction between commodity-producing, profit-making enterprises, on the one side, and protection-producing, violence-using enterprises (i.e., states), on the other, is blurred or just impossible to make. "In examining the organizations actually existing in the Western World about 1900 it is not too difficult to classify them ... either as governments or as business enterprises. But in examining the oceanic expansion of the fifteenth and sixteenth centuries, we cannot classify in this way the organizations involved. This is especially true of the key innovating enterprises. Whether we consider their motives, their methods, or their consequences, we find that these enterprises usually combined characteristics of government with characteristics of business" (Lane, 1979: 38-39).

Some capitalist entrepreneurs (or would be capitalist entrepreneurs) are induced to use violence to break up the self-sufficiency of peasant households (Marx's classical definition of primary accumulation), while others organize enterprises as if they were households providing for their members' livelihood. Whatever the form taken by the enterprise, its propensity to perform functions and use means typical of states and households prevents or restrains its specialization as a commodity-producing, profit-making institution. And this lack of specialization, in turn, hampers the capitalist enterprise in the development of strong competitive advantages vis-a-vis households and states in the provision of means of livelihood and means of protection.

The Industrial Revolution provided a way out of this impasse through a quantum leap in the number, range, and variety of fixed capital goods in which the surplus of monetary means that accrued to capitalist enterprises could be invested.⁽⁶⁾ As an increasing share of the surplus came to be retained within the Interenterprise System, each advance in the accumulation of capital did not simply bid up the terms at which primary inputs were procured, but fostered a greater division of labor and specialization of (and within) the Interenterprise System. As a consequence of this greater specialization, capitalist enterprises progressively strengthened their competitive advantage vis-a-vis

(6) The essence of the Industrial Revolution was "not only an increase in capital accumulation, but an increase in the range and variety of the fixed capital goods in which investment was embodied..." (Hicks, 1969: 142-43, italics in the original). "[The] industrial revolution was above all a transformation of fixed capital: from now on, it would be more costly but more durable: its quality would be improved and it would radically alter rates of productivity." (Braudel, 1982: 247, paraphrasing Kuznets. Italics in the original.)

households and states in the provision of means of livelihood and means of protection thereby increasing the incentives and the opportunities for states and households to relax their self-sufficiency and specialize in the supply of protection and labor power.

The breakthrough from the impasse of primary accumulation was first made in Britain because the functional specialization of state, households, and enterprises in the course of early capitalism had proceeded farther in Britain than in most other core locales and, above all, because Britain had become the center of the networks of trade and finance of the world-economy. This central position provided British enterprises with outlets, primary inputs, and monetary means in sufficiently concentrated form to sustain the Industrial Revolution before it acquired its own momentum. Once it did, however, the Industrial Revolution itself became a major factor in the establishment and consolidation of British world hegemony, mainly because it provided Britain with cheap and efficient supplies of means of livelihood and protection at a critical juncture of the struggle for world hegemony. The Industrial Revolution thus established a new "standard of coreness"--a standard, that is, against which the performance of states and enterprises was to be assessed throughout the stage of "full capitalism."

As suggested in section II, the second K came to be entirely dominated by the race to catch up with Britain. States began competing with each other in lowering costs of protection and in forcing or inducing households to specialize in the supply of primary inputs. In the process, many states experienced peripheralization while a few (notably Germany and the U.S.) actually caught up with, and in some respect overtook, Britain's core position in industrial activities. But whether or not states succeeded in their endeavor to catch up with Britain, the social structure of the world-economy was thoroughly transformed, and this transformation plunged capitalist accumulation into a new impasse.

The new impasse differed radically from the previous one. As argued above, the impasse of early capitalism was rooted in tendencies engendered by the lack of institutional and economic specialization of the capitalist enterprise, on the one hand, and by the self-sufficiency of households and states in the provision of means of livelihood and means of protection, on the other hand. The impasse of full capitalism, in contrast, was rooted in tendencies engendered by the very specialization of capitalist enterprises as commodity producers for a profit and of states and households as suppliers of primary inputs. Over a period of two K's, the solution of the previous impasse had thus become the source of a new impasse.

This turnabout can be traced to the fact that primary inputs are, in Polanyi's phrase, fictitious commodities: formally, they may behave like commodities but, substantively, they never are, and never can be turned into, commodities. Primary inputs, if they are produced at all (as labor is and land is not), are not produced in view of a pecuniary gain but for a whole variety of other reasons among which the quest for security figures prominently. To the suppliers of labor inputs what matters most is the reproduction within and across generations of a given "way of life" (consumption norms, work practices, place of residence, etc.). "Improvement" is of course welcome but normally is not considered worth the risk of preliminary disruptions in established ways of life. As a consequence, the institutional arrangements that restrain competition among suppliers of primary inputs in general and of labor inputs in particular are always characterized by a much greater inertia than the institutional arrangements that restrain competition among capitalist enterprises (Cf. Polanyi, 1957: Chs. 3 and 6).

This greater inertia meant that the secular increase in competitive pressures (generated by the Industrial Revolution and propagated by the structures of British world-hegemony) was bound to backfire against capitalist enterprises. Greater division of labor and specialization raised the productivity of capitalist enterprises but also subjected them to competitive pressures far stronger than were, or could ever be, brought to bear on the suppliers of primary inputs. Productivity growth was thus matched by a decreasing capacity of the Interenterprise System as a whole to retain as entrepreneurial incomes the gains of such growth.⁷

This contradiction came to a head in the B phase of the second K. The intensification of competitive pressures on states and households did not bring down the prices of primary inputs to match the sharp drop in the prices of final output. As a consequence, real wages rose at unprecedented rates in most states of the core. At the same time, the intensification of competitive pressures was strong enough to call forth countervailing tendencies in the form of powerful social movements of resistance to the further commodification of labor. Improving real wages did nothing to stop these tendencies. It is at this time that in all states of the core and in many of the semiperiphery nationwide (and internationally related) labor movements emerged oriented towards the preservation or strengthening (mainly through one form or another of

(7) This tendency validated Adam Smith's hypothesis of a fall in the rate of profit in the very long run. See Sylos Labini (1976).

craft unionism) of the customary arrangements that had traditionally restrained competition among suppliers of labor inputs.

IV

Collective workers' resistance to the full commodification of their labor power and the intensification of competitive pressures in the Interenterprise System were interdependent tendencies which fed on one another and left little overall room for the expansion of entrepreneurial incomes. The Organizational Revolution provided a way out of this impasse through a quantum leap in the division of labor within (rather than across) the organizational domain of the capitalist enterprise. This quantum leap gave a tremendous boost both to the productivity of the input-output combinations of capitalist enterprises and to the latter's ability to retain the gains of productivity growth.

This internal (or "technical") divisioning of labor was not a new phenomenon. As Marx (1959) emphasized, it had played a crucial role in the development of the capitalist enterprise before and after the Industrial Revolution. Nevertheless, right up to the late nineteenth century, its scope had been limited by the narrowness of the organizational domain of most capitalist enterprises.

The transition from single-unit to multi-unit enterprises through vertical integration gave far greater scope to technical divisionings of labor. A great variety of complex jobs, which had been tailored to the concrete skills of particular individuals or groups of individuals, could not be broken up into simpler jobs that required only an abstract (and more widely available) capacity to labor. As a consequence, "productiveness" was turned into an attribute of the organization itself rather than of the worker, and new sources of labor supply could be tapped and mobilized against the customary arrangements that protected the craft workers' ways of life and work.(8)

The Organizational Revolution thus gave capitalist enterprises the opportunity to kill two birds with one stone: to isolate themselves from the competitive pressures of the Interenterprise System (as argued in section II) and to shift competitive pressures onto suppliers of

(8) This aspect of the Organizational Revolution is not dealt with explicitly by Chandler (1977), who is otherwise my main source on the historical unfolding of the Organizational Revolution. In this respect, Chandler must be supplemented and complemented by Braverman (1974) and the vast literature on the transformation of the workplace in the twentieth century that has been published since Braverman's pioneering study. For a survey of this literature, see Thompson (1983).

primary inputs. Nevertheless, this opportunity was conditional upon circumstances which, in the very long run, the unfolding of the Organizational Revolution was bound to undermine. In the first place, the ability of any individual enterprise or cluster of enterprises to isolate itself from competitive pressures through the vertical integration and rationalization of productive processes was conditional upon the circumstance that most production processes had not yet been so integrated and rationalized. But with the spread of the Organizational Revolution, the Interenterprise System comes to consist of enterprises similarly organized and therefore more or less equally capable of protecting their organizational domains from competitive pressures. Shifting such pressures onto other enterprises thus becomes increasingly difficult for any and every capitalist enterprise.

In the second place, the success of the Organizational Revolution was conditional upon a particular social composition of the labor force in core countries. For this point of view, the essential characteristics of the revolution in question was the substitution of a two-tiered for a three-tiered structure of the industrial labor force. The three-tiered structure was typical of the nineteenth-century Industrial Revolution. It consisted of a lower stratum of unskilled manual workers, an intermediate stratum of skilled craftworkers, and an upper stratum of capitalist entrepreneurs who owned and managed single unit operations. The Organizational Revolution displaced this three-tiered structure and, as tendency, put in its place a two-tiered structure consisting of a lower stratum of semi-skilled operatives and an upper stratum of salaried managers.(9)

The shift of competitive pressures onto suppliers of labor inputs implicit in this substitution concerned primarily the previously intermediate stratum of craftworkers, since they were increasingly at a disadvantage in competing with other social strata for either of the expanding positions. Entry into managerial positions was foreclosed in all but marginal plant-level supervisory and maintenance jobs by the class-origin, formal educational, and credential requirements generally attached to such positions. Craftworkers (and quite often their

(9) I am here taking the view that the separation of management from ownership, emphasized by Chandler, and the separation of conception from execution, emphasized by Braverman, have been not only parallel but obverse processes, which define jointly what I understand by Organizational Revolution. There were of course social strata (such as the so-called haute bourgeoisie and the lumpenproletariat) which were not directly involved in production processes and, therefore, were not directly and immediately affected by the Organizational Revolution.

children too) were bound to lose out, not only to former owner-managers (and their children), but even more to the ever larger number of "professionals" for whom the Organizational Revolution made careers as salaried employee in capitalist enterprises more attractive than ever before. At the same time, craftworkers (but not necessarily their children) were at a disadvantage in competing for semi-skilled positions with the large variety of social strata and groups for whom entry into such positions meant an improvement in working and living conditions: unskilled workers, peasants who resided in core locales or were easily attracted to them, and the children and wives of the craftworkers themselves.

The Organizational Revolution thus brought strong competitive pressures to bear on the craftworkers both from above and from below. This competitive squeeze goes a long way in explaining why craftworkers assumed a leading position in the nationwide labor movements that developed throughout the core zone in the early twentieth century (see Hobsbawm, 1984: 222). But it also explains the strategic weakness of these movements in the core zone. For any political project to form a social bloc of craftworkers, professional middle classes, and lower social strata was bound to be undermined by the Organizational Revolution. Whenever and wherever this Revolution took off, the respective interests of these strata came into conflict. For it was precisely the demise of the craftworker that opened the way for the professional middle classes to enter managerial positions, and for the lower social strata to enter semi-skilled positions.

If these were the short-to-medium term results of the Organizational Revolution, its final outcome is an altogether different story. For the unfolding of the revolution progressively reduces the relative weight of the active agents of competition within the labor force: the unskilled worker, female and juvenile labor who could rely on the full-subsistence wage of craftworkers, peasants and other part-life-time proletarians. As the weight of these groups relative to the weight of the expanding stratum of semi-skilled operatives recruited from their ranks decreases, the opportunities of shifting competitive pressures on suppliers of labor inputs also decrease (cf. Arrighi and Silver, 1984).

To be sure, in the short run and in specific locales competitive pressures on suppliers of labor inputs can be intensified through unemployment. However, unemployment is a poor substitute for non-wage and part-life-time wage labor in sustaining competitive pressures on full-life-time wage workers in the long run and for the system as a whole. In order to compensate for the progressive decrease in the

weight of unskilled, non-wage and part-life-time wage workers in the total labor force, the weight of the unemployed would have to increase correspondingly. That is to say, unemployment would have to increase faster than employment. Even if we assume that such a tendency would not endanger seriously the legitimacy of the system, the costs of maintaining and reproducing this growing mass of unemployed workers would directly or indirectly fall on the employed workers, thereby inflating their wage demands.(10) If these demands are met, unemployment has failed to exercise its restraining influence on labor costs; if they are not met, the unemployed are not properly maintained and, in due course, they lose their capacity to compete with the employed.

The spread of the Organizational Revolution thus undermines its capacity to shift competitive pressures not only from one enterprise onto another but also from capitalist enterprises in general onto suppliers of labor inputs. An additional and ultimately more serious problem stems from the fact that the Organizational Revolution increases the organizational complexity and narrows the profit margins of capitalist enterprises. This double tendency puts considerable bargaining power, vis-a-vis the owners of the enterprise, in the hands of the workers who, at any given time, happen to occupy the managerial and semi-skilled positions created by the Organizational Revolution.(11)

This bargaining power is not based primarily on qualities embodied in the workers themselves--as was the bargaining power of the craft workers of old--but on the position occupied by the worker within the organization. More precisely, it is based primarily on the damage that can be occasioned to the enterprise (its short term as well as its long term profitability) by lack of cooperation, poor performance, or out-

(10) They fall directly on the employed workers, if the latter support unemployed members of their households; they fall indirectly on the employed workers, if the latter have to pay higher prices for means of livelihood and means of protection as a consequence of state support of the unemployed.

(11) The narrowing of profit margins results from the strategy, followed by vertically-integrated capitalist enterprises, of increasing the mass of profit through a reduction in the rate of profit and a simultaneous increase in throughput. At the same time the organizational complexity of the enterprise increases in the sense that the technical division of labor enhances the interdependence of workroles within and across the different units that make up the vertically integrated enterprise. Given this enhanced interdependence of workroles, and the enhanced dependence of profits on the speed with which inputs are turned into outputs, profitability becomes highly sensitive to lower-than-standard performance (let alone interruptions in the flow of production) in any and every workrole.

right "sabotage" on the part of whomever occupies that position. To forestall this damage, jobs come to be endowed with "rents" whose size, relative to entrepreneurial incomes, can be assumed to increase with the complexity of the organization.(12)

These "job rents" are essential to the proper functioning of the vertically-integrated, rationally-organized capitalist enterprise. To ensure their reproduction, customary arrangements develop within the capitalist enterprises which, to varying degrees, isolate their employees from the competition of the "external" labor market. Notwithstanding some formal similarities, these arrangements differ substantially from the customary arrangements that used to protect the bargaining power of craft and other skilled workers in the age of the Industrial Revolution. The old arrangements protected the market value of qualities embodied in individual workers; they originated outside the capitalist enterprise; they owed their strength to the fact that capitalist rationalization had not yet revolutionized the workplace; they prompted the Organizational Revolution and were destroyed by it. The new arrangements, in contrast, protect the rents attached to positions in the organization; they originate within the capitalist enterprise; they owe their strength to the fact that capitalist rationalization has completely revolutionized the workplace; and since they are a result of the Organizational Revolution, they cannot be destroyed but only strengthened by its further progress.(13)

In sum, the Organizational Revolution has provided a solution to the late nineteenth-century impasse of capitalist accumulation. At the same time, it has undermined the social conditions on which its effectiveness rested and has created new obstacles to the expansion of the command of capital over labor. Once again the solution of an earlier impasse of capitalist accumulation has turned into a new and even more serious impasse.

(12) The concept of "job rent" used here is analogous to the concept of "employment rent" used by Bowles (1985). The main difference is that, in as far as I can tell, Bowles makes no connection between the complexity of the business organization and the size of job rents relative to entrepreneurial incomes.

(13) The concept of "internal labor market" on which I am relying here was first introduced by Doeringer and Piore (1971). However, neither these authors nor any of their followers and critics seem to be aware of, or attach any importance to, the distinction that I have just emphasized in the text.

We are now in a position to provide an answer to the question raised earlier, about the origins of primary economic revolutions and whether these revolutions are linked to one another by some pattern of long-term evolution of the capitalist world-economy. Primary economic revolutions originate in a general impasse of capitalist accumulation and define successive stages of development of the capitalist world-economy. The Industrial Revolution pulled the world-economy out of the impasse of early capitalism by enhancing the specialization of the capitalist enterprise as a commodity-producing, profit-making institution. This specialization, however, unleashed a secular increase in the competitive pressures that core capitalist enterprises brought to bear on each other. With the spread of the Industrial Revolution in the course of the Second K, these pressures became so intense as to exceed any parallel pressure that possibly could be brought to bear on suppliers of primary inputs. Full capitalism itself was thus plunged into an impasse.

The Organizational Revolution pulled the world-economy out of the impasse of full capitalism by enhancing the vertical integration and rationalization of production processes. These tendencies reversed the secular increase of competitive pressures on core capitalist enterprises, and increased competitive pressures on key suppliers of primary inputs. In the very long run, however, the spread of the Organizational Revolution narrowed the profit margins of core capitalist enterprises and forced them to relinquish a growing share of entrepreneurial incomes to job rents.

The new impasse can be designated as an impasse of "overaccumulation" in the sense, and only in the sense, that capitalist accumulation in the late twentieth century has begun to overreach itself. The key consideration here is the relationship between capitalist accumulation and its social foundations. The impasses of the middle eighteenth century and of the late nineteenth century were due to the fact that the development of the capitalist world-economy still rested on pre-capitalist social foundations. The current impasse, in contrast, is due to the fact that capitalist accumulation has largely destroyed these foundations and has begun to transform its own institutions in a

direction which is essentially post-capitalist.(14)

Here lies the most fundamental difference between the current B phase and the late nineteenth-century B phase. As suggested in section II, of all the B phases of the last two hundred years these two B phases are the ones that present the greatest similarities: both were associated with the generalization of a previous economic revolution, and neither was associated with an open struggle for world hegemony. Yet, the two B phases differ radically from one another because the intervening struggles for world hegemony and the subsequent spread of the Organizational Revolution have closed options that were open at the end of the nineteenth century and opened options that a hundred years ago were impracticable or inconceivable.

A full discussion of these differences falls beyond the scope of the present paper. All I can do, by way of a conclusion, is to suggest lines of inquiry along which these differences can be identified. The main point of this paper has been that the impasse of accumulation of the current B phase, unlike that of the B phase of the late nineteenth century, has no obvious capitalist solution. To be sure, the current B phase will sooner or later turn into a new A phase. As emphasized in section I, B phases are nothing but periods of "excessive" competition

(14) From a social point of view and in world-historical perspective, the age of the Industrial Revolution was far less revolutionary than it is often supposed. Up to the end of the nineteenth century the proletarianization of the peasantries incorporated in the world-economy had been a process, not only limited in space and time, but more than compensated by the incorporation of new peasantries and by the redistribution of land to landless peasants in various countries. As a matter of fact, in the capitalist world-economy as a whole, the relative numerical weight of peasants with some control over land was probably greater in the late nineteenth century than it had been in the middle of the eighteenth century. At the same time, full-life-time industrial proletarians (mainly craft workers of one sort or another) relied heavily for the reproduction of their working and living conditions on guild-type arrangements inherited from precapitalist times or created anew in the age of the Industrial Revolution.

From the same point of view, the age of the Organizational Revolution has been far more revolutionary. As Hobsbawm has emphasized at a recent roundtable, "the period from 1950 to 1975 ... saw the most spectacular, rapid, far-reaching, profound, and worldwide social change in global history ... [This] is the first period in which the peasantry became a minority, not merely in industrial developed countries, in several of which it had remained very strong, but even in third world countries" (Jentz and McManus, eds., 1986: 13). Moreover, just as Marx saw in the spread of joint stock companies "the abolition of capitalist private industry on the basis of the capitalist system itself" (1962: 429), so we can see in the development of internal labor markets within the modern, thoroughly rationalized capitalist enterprise, the abolition of wage labor on the basis of the capitalist system itself.

which, at the same time, tend to generate customary arrangements in interenterprise and interstate relations capable of bringing competition back to "bearable" levels. Arrangements of this sort have been sought by core states and enterprises since the beginning of the B phase. The annual meetings of the "Group of 5 plus 2" aimed at regulating the exchange rates and at coordinating the monetary policies of the main core states is one of the latest and most significant examples of such attempts. If so far these attempts have failed to materialize in a set of stable and effective customary arrangements, the reason is that such arrangements involve processes of learning and bargaining which take time--quite apart from the fact that some of the actors involved may deem that the disruptive effects of the competitive struggle have not yet gone far enough.

As soon as the arrangements that are currently being tried out, or that will emerge in the future, acquire stability and effectiveness, the B phase will be over. Nevertheless, there is no reason for expecting that the impasse of capitalist accumulation that has followed from the generalization of the Organizational Revolution will also be overcome. As argued in sections III and IV above, capitalist accumulation has derived its vitality from precapitalist social foundations, which have provided both the means and the incentives for primary economic revolutions. Each revolution has taken the capitalist rationalization of social structures one step further but, by doing so, has also undermined the social foundations of future economic revolutions. Once the capitalist enterprise has separated itself functionally from states and households (as it has done in the age of the Industrial Revolution), and once the capitalist enterprise has thoroughly rationalized its own very structure (as it has done in the age of the Organizational Revolution), it is not clear what is left for processes of capitalist rationalization to do.

It may be argued with some reason that, even if processes of capitalist rationalization have, so to say, completed their mission in the core zone, a lot remains for them to do in the peripheral and semi-peripheral zones of the world-economy. More specifically, it could be argued that there is room for a new economic revolution aimed at reversing the trend in core-periphery relations that has characterized the age of the Organizational Revolution. According to estimates covering the period 1938-1983, the trend in question has been for wealth (in the form of job rents and entrepreneurial incomes) to concentrate in a small number of states accounting for approximately 15 percent of world population, and for poverty to concentrate in a much larger group of states

accounting for approximately 60 percent of world population--the remaining 25 percent of world population being accounted for by states that have been stationed more or less permanently between the poles of poverty and plenty (Arrighi and Drangel, 1986: 43).

What prevents a new breed of capitalist enterprises (or even established ones) from exploiting the reserves of unemployed, non-wage, and part-life-time wage labor that the Organizational Revolution created or left untapped in the peripheral and semiperipheral zones of the world-economy? And if they did, would they not be initiating a new primary economic revolution capable of rescuing capitalist accumulation from its present impasse? Needless to say, there is no easy answer to these questions. While tendencies of this kind have already been in evidence in the course of the current B phase, there is no evidence so far that they can become strong enough to have anything more than a redistributational effect on entrepreneurial incomes.(15)

This lack of evidence of an incipient primary economic revolution may be due simply to the fact that we are still in a B phase, and that excessive competition has not yet led to customary arrangements in interenterprise relations capable of sustaining the new revolution. But it might also be due to the fact that capitalism in the age of the Organizational Revolution has produced in the peripheral and semi-peripheral zones of the world-economy an environment hostile to further capitalist penetration.(16) Caught between rising job rents in the core zone and a hostile environment in the peripheral zone, capitalist accumulation may be approaching its historical limits. The next Kondratieff might well be the last.

(15) Leadership in this direction was taken by Japanese enterprises as early as the late 1960s. See Ozawa (1979). While in the 1970s the exploitation of peripheral labor reserves strengthened the competitive position of Japanese enterprises in the Interenterprise System, and seemed to lead to a generalization of the tendency to other core enterprises (see, for example, Frobel, *et. al.*, 1980), in the 1980s the prospects of a major relocation of industrial activities to the peripheral and semiperipheral zone have been deteriorating.

(16) An environment hostile to capitalist development does not involve necessarily hostile ideologies and policies. Feuding elites, extreme impoverishment, and the self-protection of society may create even greater problems for capitalist development than ideologically hostile regimes. For a regional analysis of the connection between peripheralization and the reproduction of a social environment hostile to capitalist development, see Arrighi and Piselli, 1987.

REFERENCES

- Aglietta, Michel (1979). A Theory of Capitalist Regulation: The U.S. Experience. London
- Arrighi, Giovanni (1982). "A Crisis of Hegemony," in S. Amin, et. al., Dynamics of Global Crisis. New York and London.
- Arrighi, Giovanni (1983). The Geometry of Imperialism. London.
- Arrighi, G. and Silver, B.J. (1984). "Labor Movements and Capital Migration: The United States and Western Europe in World-Historical Perspective," in C. Bergquist (ed.), Labor in the Capitalist World-Economy. Beverly Hills.
- Arrighi, G. and Drangel, J. (1986). "The Stratification of the World-Economy: An Exploration of the Semiperipheral Zone." Review, X, 1 (Summer).
- Arrighi, G. and Piselli, F. (1987). "Capitalist Development in Hostile Environments: Feuds, Class Struggles, and Migrations in a Peripheral Region of Southern Italy." Review, X, 4 (Spring).
- Bowles, Samuel (1985). "Class, Exchange, and Plunder." Paper presented at the Fernand Braudel Center, SUNY at Binghamton, October.
- Boyer, R. and Mistral, J. (1978). Accumulation, Inflation, et Crise. Paris.
- Braudel, Fernand (1982). The Wheels of Commerce. New York.
- Braverman, Harry (1974). Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century. New York and London.
- Chandler, Alfred D., Jr. (1977). The Visible Hand: The Managerial Revolution in American Business. Cambridge, Ma. and London.
- Doeringer, P.B. and Piore, M.J. (1971). Internal Labor Markets and Manpower Analysis. Lexington, Ma.
- Frobel, F., Heinrichs, J. and Kreye, O. (1980). The New International Division of Labour. Cambridge.
- Gordon, David (1980). "Stages of Accumulation and Long Economic Swings," in T. Hopkins and I. Wallerstein, eds., Processes of the World-System. Beverly Hills.
- Gordon, D.M., Weisskopf, T.E. and Bowles, S. (1983). "Long Swings and the Nonreproductive Cycle," American Economic Review, Papers and Proceedings, 73, 2 (May).
- Hicks, John (1969). A Theory of Economic History. Oxford.
- Hirsch, Fred (1976). Social Limits to Growth. Cambridge, Ma.
- Hobsbawm, Eric (1984). Workers: Worlds of Labor. New York.
- Hopkins, T.K. and Wallerstein, I. (1977). "Patterns of Development of the Modern World System." Review, I, 2 (Fall).

- Jentz, J.B. and McManus, J.C., eds. (1986). "Reflecting on Labor in the West Since Haymarket: A Roundtable Discussion." The Newberry Papers in Family and Community History, 86-2 (December).
- Kindleberger, Charles P. (1973). The World in Depression 1929-1939. Berkeley and Los Angeles.
- Lane, Frederic C. (1979). Profits from Power. Albany.
- Lipietz, Alain (1986). "Behind the Crisis: Exhaustion of a Regime of Accumulation. A 'Regulation School' Perspective on Some Recent French Empirical Work," Review of Radical Political Economics, 18, 1-2 (Spring-Summer).
- Marx, Karl (1959). Capital. Vol. I. Moscow.
- Marx, Karl (1962). Capital. Vol. III. Moscow.
- O'Connor, James (1984). Accumulation Crisis. New York.
- Ozawa, Terutomo (1979). Multinationalism, Japanese Style. Princeton.
- Polanyi, Karl (1957). The Great Transformation: The Political and Economic Origins of Our Time. Boston.
- Schumpeter, Joseph (1954). Capitalism, Socialism, and Democracy. London.
- Screpanti, Ernesto (1984). "Long Economic Cycles and Recurring Proletarian Insurgencies." Review, VII, 3 (Winter).
- Sombart, Werner (1959). "Capitalism," in Encyclopaedia of the Social Sciences. Vol. VIII. New York.
- Sylos, Labini, Paolo (1976). "Competition: The Product Markets," in T. Wilson and A.S. Skinner (eds.), The Market and the State. Essays in Honor of Adam Smith. London.
- Tilly, Charles (1985). "War Making and State Making as Organized Crime," in P.B. Evans, D. Rueschemayer, and T. Skocpol (eds.), Bringing the State Back In. Cambridge.
- Thompson, Paul (1983). The Nature of Work. An Introduction to the Debates on the Labor Process. London.
- Veblen, Thorstein (1978). The Theory of Business Enterprise. New Brunswick, N.J.
- Wallerstein, Immanuel (1984). The Politics of the World-Economy. New York.