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Accumulation, Crises, and Ways Out

Some Methodological Reflections on the Concept of "Regulation"

In the mid-1970s a number of French scholars provided a number of more or less convergent (later divergent) analyses of past growth and the current crisis in terms of the concepts of "regime of accumulation" and "regulation."¹ This theoretical advance was situated in a double context.

An economic context: the context of crisis. This crisis was evidently triggered by the "oil shock," but was diagnosed at the outset by these theorists as a crisis of long duration without any short-term prospects of returning to the strong and steady growth of the postwar period. At the same time, it was distinctly different from the preceding "great crisis" (of the 1930s): instead of falling prices, inflation continued, and instead of a cumulative collapse, the average level of activity was maintained.

A complex theoretical context. The few Marxist authors who have concerned themselves with economic history over long periods (Sweezy and Mandel among others) have stressed a kind of historical scansion, the "long waves" initiated by clusters of *technical* innovations in products and procedures; for reasons not clearly understood, such innovations exhaust their positive effects, until the eruption of a new cluster of innovations. French authors who wished, in contrast, to emphasize *social relations* came up against the domination of structuralism in French social sciences. Structuralism dwelled on the reproduction of capitalist relations in line with their tendencies and paid hardly any attention to the mediations of this reproduction, and its fragility. This left theorists unprepared to understand the crisis and the emergence of a new situation.

Of all the central concepts that emerged from the new analysis ("configuration

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of social relations," "regime of accumulation," "wage relation," etc.) the most controversial is certainly that of "regulation." We shall here attempt to clarify how this term is used in this school. To do so, we shall disregard (aside from a few incidental remarks) the international aspects, more difficult and complex, although some studies employing this methodology have already been fruitful in this domain.²

In the first, methodological, section we shall attempt to introduce the different concepts with a maximum of caution. In the second section, we will note the differences between the crisis of the 1930s and that of the 1970s as they appear from this perspective. In the third section, we will pose some questions, still from the same vantage point, concerning the belief in a purely technological way out of the crisis (in the present case, through electronics).

1. Questions of method³

What do we mean by "regulation" (of social relations)? To be fair we must warn the reader: this will really be clear only when the concept is put to work. A concept is after all only a way to apprehend reality, a tool of our thought: we construct it with a specific objective in mind, with regard to problems we set ourselves. The problems posed at the beginning of our undertaking were a response to the great crisis of capitalism which burst into the open in the 1970s after a long latency period. To understand why things were no longer working required understanding of what had worked, and why. We call "regulation of a social relation" the way in which this relation is reproduced despite and through its conflictual and contradictory character. Thus the notion of regulation can only be understood within a particular schema: relation-reproduction-contradiction-crisis.

1.1. Starting point: the conflictual character of social relations

That human beings live in relation to one another is evident enough, but to speak of a social relation implies a certain permanence in the way in which they do so. In the myriad of daily social acts, to speak of social relations is to point up the *regularity* of certain social practices. This regularity does not come about of itself, either objectively or subjectively. A relation seemingly as simple as barter exchange, the fundamental paradigm of neoclassical economics, is so unlikely practically (Adam with his fish meeting up with Smith with his deer) that it has never been established with regularity between two communities except perhaps at their margins. The monetary market relation, so widespread today, initially developed merely in quasi-experimental, venturesome, embryonic pockets, so to speak, and became consolidated only through its historical generalization.

A "market relation" or "wage relation" is, in our usage, a set of practices

which appear similar only over the long term and which moreover assume discernible contours only through being recognized as such by those who speak of them, i.e., social agents, theoreticians, or legislators. Conversely, some fundamental social relations are not recognized for what they are and assume the form of something else: wages and ground rent assume the form of a monetary market exchange in Roman law, and it was only social legislation which, in the face of the workers' struggles of the 19th century, acknowledged that the wage relation is different in nature than the market relation.

Thus identifying social relations means—as we fully accept—exposing a theoretical act (and not an empirical act) to the risks and perils of the theoretician. This act is never socially neutral since it bears on our conception of society and consequently can contribute to the legitimation or to the contestation of these relations. Indeed, the social recognition of the nature of a relation is a part of the relation itself. Naturally, what the theoretician “recognizes” is not necessarily what society recognizes: thus the category of “manager” [“cadre”] has had more practical success than the category of “non-productive labor.” But any social relation, even an economic one, has a dimension of social representation and a codification in custom, ritual, or politics.

In any case, there remains something arbitrary in the identification of relations since human beings ceaselessly invent new ways to enter into relations, and new occasions or new modes of entering into the same relation. The malleability of social relations above and beyond their historical permanence is an essential property of the concept of relation, yet there is a tendency to cease to recognize a relation when it changes form, or to cease to recognize reality if one has confined oneself to a schematic or ossified representation of its fundamental relations. The theoretician can at most endeavor to identify types of relations, or, rather, typical universal characters of a set of social practices, characters which are reproduced regularly enough to be identifiable, and to which the less typical are then connected with more or less success. This connection is a matter of style, almost of fashion.

In the 1960s, French structuralist Marxism outdid itself in the proliferation of type configurations of relations called “modes of production.” The regulation theorists were especially concerned with the “wage relation,” to the point of subsuming all others under it (whether they thought that this was the case in reality, or that this relation was so dominant that all other social forms could be regarded as perturbations of it). Whatever the case, since the ensemble of modes of production forms a social whole, it was necessary to study the articulation of modes of production, the relation between systems of relations, which was called a “socioeconomic formation.”

But to come to the heart of the matter, how can conflictual social practices be reproduced with sufficient regularity to form relations and systems of relations? We have in passing ventured a preliminary response, which is less insignificant than it seems: the recognition of a relation contributes to its perpetuation. We shall develop this remark fully, but it must first be stressed that a relation can only

be recognized when it is susceptible of being reproduced—that is, when the practices that it brings together socially have the double result of reproducing the totality of their agents in their material existence and of placing them in a position to accept, impose, or see imposed on them the establishment of the same relations. The results of practices within a relation appear to be identical to the conditions of establishing the relation in the first place. This “stroboscope” phenomenon struck the attention of social scientists in the 1960s and 1970s to the point that the determination that the theoretical conditions of reproduction of a relation were assembled was sufficient to make any further study of the existence of the social relation seem unnecessary.

It is today considered as evident that a social relation exists only if it is susceptible to reproduction, that the reproduction of the practices it organizes is the very essence of a relation, that which gives us the license to speak of a “relation.” But though this is now an obvious fact it nonetheless for too long concealed the conflictual, contradictory, improbable, and hazardous character of this reproduction of practices. Necessary conditions are not sufficient conditions. For agents to reproduce relations, it is not sufficient that they be able to do so, nor even that they have an interest in doing so; they must first be conscious that this relation can exist (that it be recognized, even illusorily, as was “the sale of labor”), and moreover, it must itself appear normal and natural. The social relation is embodied in individuals, as we have said, in the form of acquired habits and routines, like the accepted rules of a game, even if everyone seeks to improve his game. The capacity of a dominant group to impose a game that benefits it will be called *hegemony*: we will also speak even more generally of hegemony to designate the capacity of a model of social relations to be established as exemplary within a community, and even within communities that it has not yet organized (like the “American model” in the 1950s and 1960s). Even production and the choice of products and methods is the product of rules, of habits, of norms of production and consumption.

But the autonomy, creativity, or dissatisfaction of individuals and social groups (a consequence of the contradictory character of a relation) impel them to propose new norms, new relations, or even to simply demand another way of “playing the game,” of dealing the cards, within hegemonic relations. “Habitus,” assimilated norms, do not exclude divergences, which can build up to the point of deviance. Groups and individuals therefore never bring about reproduction without problem: subgroups which come onto the scene through social relations necessarily enter into conflict. This is not to say that the social relation will break down: if we identify it, it is because it has not broken down, and reproduction continues—at least temporarily, in fact until crisis sets in. Therefore, despite and even through the struggle among the agents in relation, the relation is reproduced. How? This is the *problem of regulation*.

Beyond the *possibility* of reproduction, social procedures, centers of conflict resolution, of conflicts, must ensure the *reality* of reproduction as well. The norms embodied in individuals play a role in this, but since norms change with

projects and conflicts, the transformation of norms must also be regulated. Social procedures and authority structures assuring the linked modification of norms constitute *forms of regulation* which together make up a *mode of regulation*.

The first of these forms is that through which society, however conflictual it may be, establishes the claim that it must continue to exist: this is the political level, the level of sovereignty, which in the modern era (17th–18th centuries) assumed the form of the state. The state is the entity that prevents the different fractions (determined by social relations: social classes, races, genders, or individuals) making up the community from consuming one another in an unending struggle. It is not that the struggle comes to an end, but that as long as the hegemonic configuration of social relations continues to exist, the individuals and the classes in struggle do not consume one another in it. However private the act of “entering into relation” may appear to be, it is sovereignty that defines the legitimacy and durability of relations. It is sovereignty that institutes the market and money, and codifies the wage relation.

But we must not be deceived: the state form is neither the guarantor nor the expression of harmony in the sense that the members of the community have no reason to struggle. It is the expression of a hegemony which in general translates into the domination of certain social groups, at the same time as it is the expression of that domination. Violence is therefore the ultimate secret of the state, but if force were required for each act of reproduction of social relations, it would no longer make sense to speak of a state. In general the state acquires hegemony itself, a hegemony armed with coercion: voluntarily or by force, the norms it symbolizes are assimilated and accepted, and in the case of conflict between the old and the new, or between contradictory interests, recognition of the social order is equivalent to recognition of its faculty of arbitration: it has the “monopoly on legitimate violence.”

Backed by this archetypal form, the other forms of regulation are arranged in institutional forms and networks.

Institutional (or structural) forms are the phenomenal and even legal forms through which agents experience their entering into a relation (even if they do not have an adequate awareness of the nature of this relation): the explicit rule of the game, in opposition to the mute immanent reality of the link which unites them, and at the same time opposes them. These forms are codified by convention and habit very often even before receiving the seal of sovereignty. They are the result of an institutionalized compromise: to accept exchanging goods for money is already a compromise on the violence latent in the socialization of private labor; to accept a wage is a compromise which makes no commitment as to the size of the wage. To ensure a regulation rendered precarious by the conflictual nature of relations, institutional forms have also a history, the fruit of the struggle of individuals and classes. The codification of the wage relation takes place in labor contracts, indirect wage (“the welfare state”), etc., while the codification of exchange is effectuated in successive reforms of money and credit.

But insofar as these institutional forms avail themselves of mediations (money, the indirect wages), they require a material organization for these mediations: the state administration, institutions for the management and circulation of money, the agencies of the welfare state. We use the term *networks* to designate these forms of organization of day-to-day reproduction.

These distinctions have been proposed insofar as we feel they are relevant, and should not be made sacrosanct by their users. To take an example, the permanence of the market relation extends over a very long period (many centuries), and the institutional forms characteristic of one mode of regulation of this relation (e.g., the futures market for raw materials) go back over a long period (they develop and are transformed in three generations). But if “the market” is an institutional form, markets and fairs are networks where more or less routine behavior takes place.

What we have wished to emphasize above all is the triple point of view which seems to us necessary for an analysis of socioeconomic relations:

—the theoretical analysis of the reproduction of these relations, i.e., their requirements and their dynamic, what one could call laws or “immanent” tendencies which “overhang” the routine behavior of the interrelated agents.

—the elucidation of social procedures which, in constraining individuals and groups to observe the logic of existing relations, thereby act as laws or coercive forces.

—the internalization by individuals or groups of a space of representation of social reality, of driving forces, and norms of behavior, anticipation, and choice compatible with the reproduction of the whole (though tending to deflect it).

It is the totality of these levels of realities that constitutes a sort of “social matrix” accounting for the structural stability of society. The buildup, relatively inevitable, of divergences and contradictions between the levels, themselves the consequences of the contradictory and conflictual character of social relations, may lead to discontinuities in the reproduction of these relations: *crises*. In some cases, a crisis only reflects the incompatibility of anticipations and behaviors: coercive forces, depending on the institutional forms of the current mode of regulation, must in principle “bring everyone back to reason,” i.e., to the logic immanent in the current configuration of social relations. In such cases we should speak of “minor crises” or “crisis *within* regulation.” But it can also happen that the crisis expresses a discrepancy between behaviors induced by the very functioning of the mode of regulation, on the one hand, and the tendencies or requirements of reproduction of social relations in the socioeconomic formation, on the other hand. In this case we speak of a “major crisis” or a “crisis of regulation.”

In both cases, crisis is only the other side of regulation: the one expresses and the other contains the original conflictual nature of social relations. In sum, the crisis breaks out when regulation reaches a point of “catastrophe,” when the structural stability of society can no longer be assured.

Must one then assume, insofar as a mode of regulation temporarily ensures the unlikely stability of the reproduction of social relations, that this mode of regulation "exists for that very purpose," that it was instituted with the aim of enabling the relation to work, that its function is reproduction, and that its stabilizing effect is the cause of its own existence? This would be to confuse the theoretical requirements or presuppositions of a social relation, identified and theorized post festum (when it has already demonstrated its reproducibility) with the historical conditions of its formation, as if history had prepared the realization of this relation, and had indeed intended its realization ("the misfortunes of these times will have prepared . . .").

Let us now look at the political dangers inherent in such a view of things. From a theoretical standpoint, it leads ineluctably to a kind of fetishization of the concept, a subjectivization of structures ("the mode of production demands, requires, and imposes for its own development the establishment of such-and-such an institutional form, and dictates the behavior of agents, as a director dictates the behavior of his actors"). Apart from the epistemological and ontological absurdity that is not always evident in the use of these implicitly functionalist or teleological¹⁴ concepts, it seems to us necessary to reject fundamentally the determinism, the univocalness of the process of generation of social forms which it unavoidably entails. Otherwise, the variety (among communities) and the variability (among epochs) of the configurations of social relations, the process of articulation of modes of production, or particular forms of regulation conducive to the reproduction of relations, which are nonetheless fundamentally similar, become totally incomprehensible. This variety and variability of forms of regulation, this plasticity of the relations themselves, are only comprehensible if one bears in mind that it is we (the theoreticians) who unearth social relations in the practice of concrete human beings, and that relations do not organize themselves. The invention and stabilization of these relations are the product of struggles of classes or groups (social movements), born on the terrain of preexisting relations sometimes different from those they are working to stabilize, and hence determined by existing circumstances, but with that margin of freedom, that irreducible unpredictability which is entailed by the mediation of the *project* between "interests" and behaviors.

Is this to say that history is only a kaleidoscope of chance movements about which there is nothing to be said other than the chronicle of their passing? Certainly not. First, not everything is possible, not every innovation is viable, and not every configuration of relations is stable. Again, if a social relation offers itself to our attention for examination, it is because it has become stabilized, and hence its contradictions have been resolved. There is therefore a reason to undertake a *general* study of a mode of production, of its contradictions, and hence of the logical requirements for its stabilization. Then there are grounds for a *special* study of the solutions, always original and a priori unexpected, which history brings to these contradictions. For the concrete satisfaction of these

requirements will not derive from some necessary materialization of a structure pre-existing in the heaven of Ideas. It is a historical discovery. It is sometimes put together from parts, when the hegemonic group has explicitly sought a solution to a contradiction and thinks it has found it. But in general it is the product of the social innovations internal to every community organized into a nation state, or indeed, of the concomitance which proves to be complementarity of the parallel processes of which the different socioeconomic formations are the locus. These innovations are the result of institutionalized conflicts and compromises between projects with whose results no one, in general, was greatly concerned. Finally there is reason for a *concrete* study of the diminution of the beneficial effects of these "discoveries" brought about simply by the development of underlying contradictions.

That is to say, the history of "social matrices," just like natural history (as recent evolutionary theory, the theory of "punctuated equilibria," sees it) is full of innovations with no future, or of occasional monstrous experiments which failed to set a fashion, so to speak. It was neither Hitler, Roosevelt, nor the Popular Front (and even less John Maynard Keynes) who invented the "way out" of the crisis of 1930. The mode of regulation that would be established after World War II would combine more or less felicitously, depending on the nation state, diverse innovations, sometimes very old, which later proved able to create a system, i.e., able to resolve (temporarily) the contradictions that the study of the general requirements of the mode of production had revealed to us. The new mode of regulation was not created for the "purpose" of resolving them, but it has continued to exist and develop because of the fact that it was engaged in resolving them. In this sense, and in this sense only, can we speak of a "functionalism a posteriori," or "ex post": history having its ways, and things being as they are, the mode of regulation has "the function" of resolving these contradictions.

1.2. Capitalism: structure, contradictions, regimes of accumulation, and modes of regulation

We may summarize the structure of the capitalist mode of production as a combination of two or three fundamental relations: the commodity (monetary) relation and the wage relation, the latter being analyzable, in different styles, into two elements.

(a) The commodity relation

The commodity relation is constitutive of a society in which production for society takes place in private economic units, i.e., units operating independently of one another. The contradiction is resolved by exchange or trade, which has a double aspect:

—in the exchange of a good the labor expended in its production is socially validated;

—the owner of the unit that has produced the good acquires the *right* to an equivalent part of the social labor produced in another unit of the division of labor.

Concretely, the commodity producer must be able to exchange his product against acknowledgment of the social value of his labor, which gives him in turn the right to the labor of another. This legal token of acknowledgment is a social institution: *money*, and the necessity of obtaining the acknowledgment of the social validity of one's own produce through an exchange for money, if one is to enforce his right to an equivalent part of social labor, constitutes *monetary constraint*. Every commodity economy worthy of the name is monetary, i.e., there exists an institution that plays the role of a *universal equivalent* in terms of which each producer measures his participation in social labor, but which in return enjoys an unconditional right to immediate exchangeability against other goods. It is because the actors are aware that they can validate their products against a quantity of money (*realize* them in money) that they perceive their products as having "*value*" and even "*a*" value. That the substance of value may be social labor (and it is *this* which "*socializes*" the value form) or that commodities may have "*a*" value (which takes the phenomenal form of a quantity of money, their *price*, for which it is found that they can be exchanged), does not necessarily mean that there is a simple microeconomic connection between their "*value*" and the average quantity of labor expended in the production of each type of commodity (the inverse of which is productivity).⁵

Other social relations come into play here, and in claiming his share of social labor each producer for the market asserts not only the rights that his own participation confers upon him, but also other rights resulting from these social relations (ownership of land, capital, etc.). The totality of the norms accepted by the commodity producer allows him to determine his supply price on the basis of "*surface connections*" among his costs, his expenditures in labor and the subjective assessment of his rights. The effective realization or non-realization of his product at this price, and hence the claim that this gives to him on the product of the rest of social labor, is the general form of regulation corresponding to commodity production, called the *law of value*.

The surface connections, mechanisms for setting supply prices and more generally for expressing monetary income, depend in a crucial manner on the totality of forms of regulation operative within the particular social formation. They are the forms in which coercive laws show social actors that they are a part of society as a set of constraints within a space of representation in which they deploy their strategy (the world of prices and revenues).

What conditions are required of an institution for it to serve as money? As we have said, it must be socially acknowledged as *representing value* and it must be *unconditionally exchangeable* in this capacity, i.e., in contrast to commodities it

need not be validated but is validated a priori.

The condition of representing value depends on the habits of social actors, and so on the conceptual-representational aspect of value. Thus a particular commodity (gold) may represent value—because it has value. But a representation of value in process—value in the process of being produced and socially acknowledged, e.g., a commercial bill of exchange—can also fulfill this role if dealers have acquired a sufficiently developed mode of representation of value, and if they accept that the production represented by the bill will in the end be socially validated, so that it represents a claim on subsequent revenue.

As for the other condition, the convention acknowledging the uncontestedly exchangeable nature of the labor represented by money, gold is money because it bears the seal of the sovereign who gives one or another metal (and sometimes two) the monopoly on unconditional exchangeability. This commodity is "*elected*" to be the social representative of value, and so is excluded from the circle of commodities in the strict sense (which must be validated in every instance).

Actually the same holds for "*credit money*," which represents confidence in the social validity of value in process. The banker who opens a line of credit to an entrepreneur anticipates locally the validity of the latter's labor commitments in a particular line of production (he prevalidates it). It suffices for there to be general confidence in the capacity of the banker (or of a group of bankers who exchange acknowledgments of the debt among themselves) to evaluate the soundness of the commitments of his (or their) debtors. Such a case represents a fragmented system of issuing money. But then the risky stabilization of a confluent set of confidences must very soon give way again to the sovereign selection of "*trustworthy*" notes by the bank of the sovereign: the central bank. The bank declares that only those notes which it issues "*represent value*," since they are backed by the flows of value whose validity it posits (or pseudo-validates), and it compels the acceptance of these notes as "*genuine money*": they have legal tender. The system thus becomes centralized.

In reality the monetary system is an incredibly variable combination of commodity money and credit money, of a fragmented system and a centralized system: it is a hierarchized system.

The monetary constraint is thus more or less strained. The simple binary "*election/exclusion*" is supplanted by a differentiated scale of validity recognized for papers, bills, from the centrally issued money, acceptance of which is imposed upon all, to the paper for risky loans, which merely represents a claim on reimbursement assumed with its risks and perils by the lender alone, through the private loans which the central bank pseudo-validates by discounting them or buying them back.

This hierarchy is the framework within which the law of value operates. The regular validation of products takes place through the reimbursement of debts (short-term or long-term); non-validation of products that prove ultimately to be socially useless takes place through the selective depreciation of outstanding

debts. If monetary differentiation were reduced to the opposition between a meager stock of metallic money and a flow of commodities, circulation would be insufficiently liquid and dangerously deflationary, since the sale of goods would be contingent upon the return of private funds to circulation. If, however, the central bank were to pseudo-validate everything, the hierarchy would be abolished and any producer could obtain the monetary counterpart of a product that might not even be saleable. Then money would rapidly lose all credibility as the representation of socially validatable labor. This would be a (hyper-) inflationary crisis, unless it were contained by the forced savings, stocks, and queues of state capitalism.⁶

The possibility of an institutional form like credit money, especially with legal tender, seems therefore to be contingent on the capacity throughout the whole of the commodity economy of correctly anticipating the coherence of the flows of values in process. Conversely, it is "functional" (in the sense defined above) in a type of commodity society in which the purpose of circulation is the maximum expansion of values in process, circulating among the social actors: this is the case of developed capitalism. But now we must introduce an element which distinguished the latter: the wage relation.

(b) *The wage relation*

This relation is constituted by the separation of the producers from the means of production. It is necessary to distinguish two dimensions of this relation, or even (depending on the preference of the particular theorist) two relations:

—from the standpoint of economic *ownership*, i.e., the capacity to assign economic units to this or that branch of production in the market economy and to dispose of the product;

—from the standpoint of the relation of *possession* or real appropriation, i.e., the capacity to organize and put into motion the productive apparatus.

The separation in the case of the first relation is resolved in the *wage contract* between the owner of the means of production and the free worker. This general framework consists in an institution which mobilizes at the outset the legal conceptions (right of use and of abuse); its routine practice requires an agreement between the "capitalist" and the "wage-earner" setting the price and the duration of the working day, as well as the limits (or absence of limits) on the pace of work. The methods and specification (codified in law) for establishing this contract have evolved considerably. What interests us here, from the standpoint of our analysis of the fundamental contradictions of capitalism, is that the wage contract represents a double exchange.

—In return for placing their labor power at the disposal of the capitalist, wage-laborers obtain a value in money which they may dispense freely but which in fact assures them a certain way of life, a norm of consumption, the value of which is lower (globally, and expressed in money terms) than the value of their output (the

value added), the difference being called *surplus value*.

—in return for this relinquishment of surplus value and this submission ("formal submission") to the control of capital over their labor, capital assumes the risks of commercial validation of the product of their labor.

In other words, the value of labor power is less than the produced value but it at least is validated. The wage, which is what is received in return for the sale of labor power (to which indirect wages will be added during the course of time), therefore presents itself immediately as a demand in monetary terms on the commodity production of the period. Conversely, surplus value, divided up in a complicated manner by the competition of capitals, permits capitalists to *accumulate* capital, i.e., to increase the quantity of value in process which they own by new purchases of means of production and new hiring.

The rate of surplus value (surplus value relative to wages), therefore, quite clearly establishes a new contradiction the unity of which is resolved through struggle: excessive wages and insufficient accumulation, or excessive profits and insufficient demand. This is the fundamental problem of the regulation of the wage relation.

But this relation is not the only one that is established within what we call the wage relation. Even more fundamental is the relation between human beings (and machinery) within the labor process (or the relation of possession). In contrast to craft production, in which the producer makes use of the tools which he himself may have designed and adapted to his own use, so that he retains control over his activity, capitalism tends to organize a collective labor process in which it seeks to separate the intellectual element or conception of productive activity from the manual element or routine execution. This appropriation of collective know-how permits the capitalist to control the use and pace of labor time: this is "real submission" of labor to capital. It takes material form in modes of mechanization: from a producer using a tool, the worker tends to become the servant of the machine.

Like all socialization of know-how, this process tends to raise productivity. But unique to capitalism is that it involves a "socialization-appropriation" in which social knowledge is materialized over and against the direct producer as fixed capital which is alienated from him. This tendency finds its counterpart in the increase of the ratio between capital advanced and value added, called the "organic composition of capital." This manifestation, dealt with by one tendency within the sociology of labor, is, however, subject to perturbations: aside from the fact that the technical composition ("machines per capita") does not necessarily increase, the decline in the value of the machines themselves, along with productivity, begins to counteract it.

In any case, new areas of contradiction open up. The capitalist increases his direct control over the work pace of the wage-laborer by increasing the distance between the producer and his activity, but he will refuse to mobilize the wage-laborer's capacity for initiative since that could be counterproductive. While

making the worker autonomously responsible he gives him more opportunity to adapt and innovate, but loses the means to control his submission, except through some relative advantage. The regulation of this contradiction takes material form through the struggle at the workplace itself, but also within the networks of reproduction of labor power, in the institutionalization of a skill structure, of varied standards of company discipline, etc.; the result is a differentiation within company workforces and in the reserves on the "labor market."

Here we are mainly concerned with the problems posed to accumulation by changes in productivity and in the organic composition of capital. Capitalist demand for means of production (fixed capital and intermediate goods) constitutes in effect the second locus (after spending by wage-earners) of social validation of autonomously initiated production. This leaves state spending (financed by taxes or the creation of money backed by taxes) and nonproductive consumption by capitalists. But productive consumption (capital investment) has the distinctive feature that it engages future production. We speak of *extensive accumulation* when accumulation takes place through the simple expansion of production processes with the same techniques, and of *intensive accumulation* when the norms of production (i.e., the dominant techniques indispensable to all by virtue of their higher productivity) are continually disrupted as accumulation progresses. In reality, the two are of course intimately intermeshed, and one should speak of accumulation as predominantly extensive or predominantly intensive.

In any case, accumulation is the result of the autonomous decision of a capitalist who hires more social labor in the hopes that it will be validated. In doing so he contributes effectively to the validation of the product of the period (by investing and by hiring) but poses the problem of later validation on a larger scale. This brings us to the fundamental problems of capitalist production.

1.3. How can accumulation succeed?

Social reproduction as a whole works like this: "capital values in process" move in parallel flows as commodities are exchanged for one another, or for those special values in process, wage earnings. How is it possible that this tangle of autonomous processes is woven into a coherent social product in which all private commitments of labor (through capital spending) are validated? As in any social relation, experience of the possibility of a solution is in itself one of the bases of the solution. Depending on his gains (previous earnings) and his knowledge of the market (tested and proven in preceding periods) the capitalist judges that it is a good bet to reestablish the wage relation and to repurchase constant capital, and in this way already contributes to the validation of the product of his fellow capitalists and the labor power supplied by the class of wage-laborers. The conditions inherited from the past and the anticipation of a future which is a

continuation of that past are the conditions of the social bond in the present. The continuity of accumulation, the acquired habits of an allocation of capital in equilibrium among the different branches, the anticipations of the social orientations of transformations of the standards of production and consumption—these dominate, like an immanent force, the private bets of entrepreneurs (and their bankers), laying the foundations of a social matrix which we will here call a *regime of accumulation*.

The regime of accumulation is a mode of systematic distribution and reallocation of the social product which over a prolonged period is able to coordinate transformations in the conditions of production (volume of capital invested and its distribution among the branches and norms of production) with transformations in the conditions of final consumption (consumption norms of wage-earners and other social classes, collective spending, etc.).

When accumulation is expanded, especially intensively, the growth of the production of capital goods and consumer goods must be adequate to the growth of capital investment and the growth of the buying power of wage-earners. It is therefore convenient to show the coherence of a regime of accumulation with a reproduction scheme describing the allocation of capital (and hence of labor) from one production period to the next between the two fundamental departments of production of use values, defined in terms of their social function (Department I: capital goods, reproducing the monopoly of capitalist property; Department II: consumer goods, reproducing the existence of free laborers). The reproduction scheme is in a sense the skeleton of the accumulation regime, the blueprint of its formal coherence.

At this point, several typical regimes of accumulation appear: extensive accumulation (simple homothetic growth of the two departments validating each other), intensive accumulation without mass production (in which the expansion of constant capital by itself validates growth in Department I), intensive accumulation with growing mass consumption, etc. Of course, an analysis of a concrete regime of accumulation requires certain refinements beyond this basic conventionalized blueprints.

Every concrete regime of capitalist accumulation is in effect surrounded by an "exterior" in the double sense of the word. First, not all production within a national community is governed by capitalist relations, beginning with the reproduction of labor power. The patriarchal social relation, or domestic mode of production, assures its reproduction by making use of the "means of reproduction" purchased by a worker's wage. The "producer" in this social relation—wife, mother, or eldest daughter—creates no "value" because this labor is not working for the market. It is free for capitalism, which is not to say that domestic exploitation has the "function" of lowering the cost of labor power, or that it was created for this: again, it is a windfall! On the other hand, capitalist production for the market may take over a growing portion of domestic production and domestic functions, which are thus a possible field of expansion for wage-earners

and capitalist accumulation and so a possible dimension of the regime of accumulation. The same is true for all modes of production which articulate with capitalism in a specific socioeconomic formation (simple petty commodity production, bastardized forms of feudal relations such as sharecropping and tenant farming, etc.).

But another dimension appears if one takes into account the economic relations between capitalistically organized communities. Historically, the first practices identifiable as forming a "capitalist relation" in fact went largely beyond the frontiers of feudal or tributary states. But the modern nation-state, conceived as a community of individuals linked by social contract, developed with the generalization of market practices. It is in this framework that the wage relation was codified and institutionalized under the cloak of state sovereignty forged by the history of civil and foreign struggles. It is at the level of the nation-state that social contradictions are settled, and thus that the coherence of genuine regimes of accumulation is gradually affirmed, with the unification of the one and proliferation of the others nourishing each other.

The "creation of the internal market" through the development of capitalist relations has never entailed the disappearance of international trade, which has diminished or expanded in accordance with the evolution of regimes of accumulation. It is useful therefore in analyzing a regime of national accumulation to distinguish an "export sector" (Bertrand 1978), the earnings of which help to finance the external purchase of goods for use in Department I or Department II. From a certain point of view, one can even speak of "world regimes of accumulation" (Lipietz 1985a).

These then are the foundations of our "social matrix." Of course regimes of accumulation do not materialize by themselves through the power of Platonic ideas of reproduction schemes fallen from heaven. Reproduction schemes can always be invented. The problem is to know what coercive forces, what institutional forms, will ensure the coherence of the strategies and anticipations of the agents in a capitalist market economy, to enable them to converge toward the realization of a reproduction scheme.

This brings us back to the problem of regulation. We will therefore use the term *mode of regulation* to designate the totality of institutional forms, networks, and explicit or implicit norms assuring the compatibility of behaviors within the framework of a regime of accumulation in conformity with the state of social relations and hence with their conflictual character.

In the capitalist mode of production, the forms of regulation must at the very least concern:

—regulation of the wage relation (establishment of norms for working time, work pace, value of labor power, consumption standards for wage earners, reproduction of the hierarchy of skills, reproduction of the segmentation of the labor market, etc.);

—regulation of the reallocation of monetary capital freed by the validation of commodities to this or that branch or in accordance with this or that degree of intensification of the organic composition of capital;

—reproduction and management of money, its issuance, its circulation, its forms of productive investment, etc.;

—the forms, from legal to economic, of state intervention.

The extreme variety of these forms opens up an immense field of inquiry for the "Regulation School." Nevertheless it has been found to be heuristically very useful to distinguish two contrasting modes of regulation characterized by institutional forms, in one of which the aleatory social validation of the commodities and labor power put on the market is simply confirmed *ex post facto* and in the other of which the high likelihood of this validation is integrated *ex ante* in the behavior of its agents. In the first case, values in process either clear one by one the perilous jumps of the metamorphosis into money, or are eliminated. In the second case, in contrast, values in process include both their own growth and the transformation of social norms of production and exchange to guide their metamorphoses.

In the first case we speak of *competitive regulation*, in the second of *monopolistic regulation*. At the one extreme, labor power is sold from day to day at a price determined by market forces, or will not be reproduced. At the other extreme, not only will a minimal return be guaranteed to the wage laborer by the very fact of his existence, but he will hire himself out to a private entrepreneur on a multi-year contract which takes account of expected alterations in the economic environment. In the first case, values in process offered in the form of commodities on the market will perish, or will obtain their right to the metamorphosis into money, according to the division of labor imposed on the producer. In the other case, financial groups will actually shape the evolution of norms of production, financing the development of new products and processes with the duly monitored depreciation of branches of production whose obsolescence they themselves will organize. In competitive regulation, it will be necessary to have value-bearing commodity money from the very outset to exchange against commodities. At the other extreme, it will be sufficient to be recognized as being capable of carrying to completion a value in process to be offered the monetary symbols permitting the first metamorphosis.

This artificial polarization should not lead to a new dogmatism, a new scholasticism, or attempt to comprehend all particular forms on the basis of the general character of the mode of regulation, or even a formal combination of elements that are "competitive from this standpoint, and monopolistic from another standpoint." It will be much more useful to study how the "windfall" or historical assemblage of institutional forms in the end contributes with particular felicity to the regulation of a regime of accumulation, in a case where the persistence of earlier forms had led the preceding regime of accumulation into a major crisis. Then temporal discrepancies, sometimes very considerable, will be found in the

application of forms of regulation which later will succeed in "creating a system," i.e., discrepancies among these forms and between them and the regime of accumulation. The institutional forms or networks assuming the same "function" within a mode of regulation will be found to vary extremely from one country to another. Finally it will be found that the dominance (hegemony) of one mode of regulation does not exclude the survival (and the "functionality") in particular markets of subordinate forms.

2. From one great crisis to another

The concrete studies on the basis of which the concepts of the "Regulation School" were formed initially concerned the United States (Aglietta 1974) and France (CEPREMAP 1977).

2.1. A highly schematic picture

We shall here draw on the French case. Capitalism seems to have consolidated itself in France definitively after the "last crisis of the *ancien régime*" (that is, an agriculturally based crisis) of 1845–48. Until 1914, extensive accumulation predominated (unevenly, depending on the sub-period) with a progressive expansion of the capitalist sector based on heavy industry in the metals sector (iron and steel for the railroads) and in quite simple forms of cooperation in textiles and construction. Within the capitalist sector in the strict sense (agriculture was dominated by petty commodity production), there was no great change in the organic composition of capital or in productivity. Productivity grew at an average rate of 2 percent during the period, while the increase in the buying power of the labor force was about 1.5 percent. Regulation took place through the classical "business cycle." Prices and buying power grew during booms; the crash was accompanied by a general fall in prices and wages which did not completely wipe out the increase in workers' buying power.

The institutional forms of this competitive regulation were, to describe them schematically:

- an adjustment of wages to the cost of living by the day-to-day sale of labor power, depending on the state of labor market forces, with a relatively stable skill structure;

- firms principally engaged in a single sector, adjusting their prices as a function of demand, with transfers of capital from one branch to another taking place principally through the stock market;

- money based in the last instance on the commodity, gold, with credits piling up subject to waves of speculation;

- a state "external" to the economy, intervening only to ensure respect for the legal structure of capitalist property.

At the end of the 19th century, extensive accumulation came up against certain limits, on the one hand with regard to trade outlets (sought in a foreign trade

"protected" by imperialist relations), on the other hand with regard to productivity. This was the stagnation of the 1890s, the great crisis of extensive accumulation.

In France as later in the United States, an extremely complex movement then developed among engineers and entrepreneurs to restore increases in productivity by deepening the relation of the real domination of capital, by expropriating the know-how of the professional worker, by the "scientific organization of labor," and by deskilling the worker's job. This movement, triumphing with the help of the First World War, was "Taylorism," which developed very rapidly into "Fordism," by which we mean, *as regards the labor process*, the incorporation of expropriated know-how into the automatic system of machinery.⁷

In the 1920s, the development of Taylorism and the rudiments of Fordism gave rise to the first great wave of intensive accumulation. Productivity grew at a rate of 6 percent per year. But purchasing power stayed at its original mediocre level. This gap, highly favorable to the profit rate by way of a rise in the rate of surplus value, which in no way compensated for the low growth rate of the composition of capital, provoked a crisis of overproduction itself without precedent, the crisis of the 1930s. This was more than a "low point" in a cycle. Intensive accumulation could no longer be satisfied with competitive regulation. Therefore the great crisis of the 1930s could be described both as the first crisis of intensive accumulation and as the last crisis of competitive regulation. The appeals of Henry Ford I and J. M. Keynes to match the rise in productivity with an increase in the purchasing power of wage-earners clashed with short-term objectives of reestablishing the profit rate "ex ante" by lowering aggregate wages (Boyer 1982).

After the reconstruction of 1945–1953 (dominantly extensive by nature) France experienced a new intensive boom, which this time lasted twenty years (1954–1974), during which productivity tripled along with fixed capital per capita. But this time the increase in the buying power of wage-earners (productive and unproductive) kept almost perfect pace with the increase in productivity. Since the increase in productivity was roughly the same in both departments, the organic composition of capital remained almost unchanged, along with the rate of exploitation.

We will go into more detail about these results later on. For the moment, they allow us to outline the "golden age."

2.2. An "ideal" regime of intensive accumulation under monopolistic regulation

In this "golden age" model:

- the growth rate of the overall technical composition (i.e., roughly speaking, fixed capital per capita) and of productivity in Department I were the same. This "countertendency" to the increase in the technical composition inhibited the tendency for the value composition of capital to increase.

—the growth rates in wage-earner consumption and in productivity in Department II were the same. The “countertendency” to the declining rate of profit which an increase in the rate of exploitation would have brought about was definitely inhibited, but at the same time the tendency toward a crisis of underconsumption was also inhibited. And, since the organic composition of capital did not vary, the general rate of profit remained stable.

These two conditions were roughly met in France from the period of reconstruction to the crisis. But there was no a priori assurance that this would be so.

The first condition was verified in an almost miraculous way (and in fact statistical data show that it has been less and less true in the principal industrialized countries since the 1960s [Lipietz 1986]). On the other hand the second condition was assured more or less explicitly by a policy of regulation of the wage relation: mass production was accompanied by mass consumption, thereby consummating the development of Fordism. This partial regulation was part of a totality of institutional forms which constituted one variant of monopolistic regulation.

The mode of regulation consolidated after 1945 combined, schematically speaking, the following institutional forms:

—a wage relation characterized by middle-term contracts for direct wages, the expansion of indirect wages through transfer payments, and legal procedures of indexing increases in nominal wages to price increases, and even, more or less explicitly after 1968, to increases in productivity (Boyer 1978);

—a centralization of capital into industrial and financial groups capable of setting their supply prices in response to fluctuations in the business cycle by an increasingly rigid “markup” procedure (Boyer and Mistral 1978);

—the expansion of credit money issued by the banking system as a function of the amount of money required by the laws of evolution of the system of wages and nominal prices (“external connections”) mentioned above (Lipietz 1983a);

—a considerable reinforcement of the role of the state, not so much (contrary to Keynes’s predictions) through direct government spending as through the management of the wage relation and the money relation (de Brunhoff 1976): what Delorme and André (1982) called “the inserted state.”⁸

It was the functioning of this mode of regulation, superimposed on the universalization of Fordism in the labor process, which permitted the a priori observance of the two rules of the “golden age schema” of intensive accumulation.

Again, the two rules are quite dissimilar. The second, stability of the rate of exploitation, seemed to be verified ex post facto over a quite long period (Mazier et al. 1982). However, the rather tortuous profile which throughout the entire 19th century and up to 1939 reflected ex post facto adjustments punctuated by booms and crises was followed by a type of adjustment which was regular and above all anticipated by firms, through an increase in buying power.

In contrast, the first condition, compensation for the rise in technical composition by the depreciation of constant capital, seems to have eluded every a priori

control. Nonetheless, it was still necessary that the depreciation of constant capital not discourage capitalist firms from revolutionizing their own labor processes. The new monopolistic laws of nominal price setting through markups over the cost of capital accounted for nominally in bookkeeping as non-depreciated capital came onto the scene to remove this obstacle: the general depreciation of constant capital was diluted by a general decline in the quantity of value represented by money without the most dynamic firms being penalized for this.

In effect competitive regulation and the decline in the value of fixed capital would be echoed in declining commodity prices, and hence in declining cash flow, which included depreciation. These echoes did not occur in monopolistic regulation. Nominal cash flows represent, however, a lower value or a latent inflation which is not transformed into overt inflation since the underlying value relations permit firms to update their equipment (growing in volume but decreasing in value) with cash flows set into motion by the imposition of a marginal rate compatible with the real rate of profit (Lipietz 1983).

As long as the “golden age” conditions of Fordism endured, the rate of nominal profit as calculated from a firm’s bookkeeping based on the comparison of the elements of cash flow and assets, developed in parallel with real economic profitability calculated on the basis of a statistical evaluation of fixed assets, longevity of equipment, productivity of fixed capital, division of value added, relative prices, etc.

Unfortunately for capital, value relations continued to change in a direction unfavorable to profitability. Let us now examine this question in more detail.

2.3. *The crisis of Fordism*

Three series of phenomena and different sequences of linked events must be distinguished in the development of the present crisis:

—those that have to do with the general crisis of Fordism and which can be found in more or less every country that has adopted this mode of development;

—the sequences of events that amplify the interconnection between different socioeconomic formations;

—the phenomena specific to each of the social formations involved.

We shall not of course deal here with the national specifics, although their study is presently one of the most fertile areas of development of research inspired to some degree by the Regulation School. The distinction between the first two sets of chains of events should, on the other hand, be quite clear; their political implications are evident. As regards the second group, the crisis seems to be a crisis merely in *national* monopolistic regulation which became contradictory as production began to be internationalized; a way out of the crisis through a “concertated recovery” was envisaged. With respect to the first group, the crisis also touches the roots of the intensive regime of accumulation based on Taylorist principles of the organization of work and Fordist development of mass consump-

tion. Different studies have accented one or the other of these groups of phenomena, depending on the concerns of the researchers involved; we shall here try to present a synthesis (developed in more detail in Lipietz 1985a).

The clearest symptom of the crisis of the regime of accumulation is the general slowdown in productivity gains which occurred toward the end of the 1960s and affected the most typically Fordist branches of the economy, like the automobile sector (Boyer 1979). But how could this slowdown give rise to a crisis?

First, there is the contradiction between the slowdown and the maintenance of tendencies for purchasing power to increase. The crisis would then derive from a profit squeeze due to the increase in the cost of wages per unit produced. However, statistics do not seem to confirm this diagnosis for all of the industrial countries in the early 1970s. In addition, if this had been the origin of the crisis, a mere slowdown in wage raises (direct or indirect) would have been sufficient to stop it.

It is more convincing to take into account the other aspect of the profitability of capital: these declining productivity gains demanded, from the mid-1960s on, an increase in the *value* of capital per capita or, in Marxist terms, in the organic composition of capital (Lipietz 1986). "Markup" procedures proper to monopolistic regulation initially compensated for this decrease in "instantaneous" profitability of capital by a nominal increase in profits, but the repercussion of the latter was an increase in the share of depreciations in the gross margin of self-financing. Hence an increasing tendency for firms to become more indebted, and an increase in financing costs which, compounded by the increase in depreciations and the increase in the relative price of investment, led to a latent crisis of the capacity to invest.

Whether the accent is placed on the profit squeeze or on the increase in the organic composition of capital, the present crisis of intensive accumulation seems to be a crisis in *profitability*, in contrast to the crisis in 1930 which was a crisis in *overproduction*. In effect the institutional forms of monopolistic regulation inhibit the "depression spiral": the rise in indirect wages cancels out the decline in overall buying power (despite the increase in the number of unemployed), and the solidity of credit money permitted the survival of values in process (and hence of firms) which would have been driven into bankruptcy in a banking system constrained by a gold standard. The crisis therefore takes the form of *stagnation* (and not a collapse in production) coexisting with *inflation* (and not an erosion of prices).

Two questions remain. First, why the decrease in productivity? And second, why the spread of the crisis, with real depressions becoming more and more violent?

It is with respect to the first question that the analyses which we have just drawn on are distinguished most clearly from the theory of "long waves of innovations." Indeed, it is quite difficult to perceive any slowdown of technological innovation in the 1960s. On the contrary, nothing basically new (other

than television) was the basis of postwar growth, and transistorized informatics was already well developed in the early 1970s. On the other hand, the successes and failures of Taylorist and then Fordist principles of the organization of labor were manifest (Coriat 1979). The slowdown in the increase in fixed capital per capita in the 1960s was easy to relate to the spread of work teams, an expedient which came up against social limits, and quite simply obvious material limits. The slowdown in productivity gains could clearly be linked to the "technical" problems of the scientific organization of labor (balancing work stations, lack of flexibility, etc.), and especially to "social" limits which became explosive in the late 1960s (insubordination of the working masses, disruptive strikes, absenteeism, wastage, etc.). The contradiction between the dispossession and the involvement of the direct producer became totally resistant to regulation.

On the other hand, the declining profitability of capital could have been reflected in a slow modulation of growth: except for the oil crisis of 1973, this was more or less the case up until 1979. The world recovery of 1975 by no means entailed a resumption of earlier growth rates, and this stagnation, which we related above to profitability, was nonetheless manifested as a latent crisis of underconsumption, with unutilized capacities coexisting with unemployment and unsatisfied needs.

At this point it is necessary to take into account, on the one hand, the reaction of employers and governments to the crisis of Fordism (austerity policies) and, on the other, internationalization.

Faced with decreasing profitability, compounded in 1974 by the "leak" of oil revenues, the first temptation was in effect to *reduce the consumption of wage-earners*. This effectively triggered the symptoms of a crisis of underconsumption which under the constraints of monopolist regulation did not fortunately spread at the pace of 1930-32: a "safety net" stopped the depressive spiral. Nonetheless, the internationalization of production prevented a straightforwardly "Keynesian" recovery by way of consumption. Let us now examine this point.

2.4. Amplification of the crisis: "austerity-internationalization"

The cost of wages per unit produced acquired a "third dimension" as the crisis became international. Monopolist regulation arbitrated between its aspect of "cost to the entrepreneur" and that of "determinant of the volume of final demand." The existence of labor contracts and of social legislation inhibited, *within* each social formation, any competition among enterprises by way of low wage costs. As regards international competition, it in fact played a rather minor role in the 1950s and 1970s. Since Fordism was based on the development of the domestic market, the share of manufactured exports among the majority of the industrial countries (including Japan) in fact reached its historical minimum around 1965. The decline of external outlets was even more spectacular if one

looks at no more than trade between the continental blocs of USA/Canada and the EEC (Jeanneney 1983).

Clearly nothing obliges the different countries in a single continental bloc to make a concerted effort to increase the buying power of their wage laborers. There was in fact an *implicit* regulation through the existence of common agreement on the model of development, an agreement which was corrected at the margin by cooling-down and devaluation policies. The preliminary declaration of the Treaty of Rome which founded the EEC is typical: "The mission of the Community is to promote a harmonious development of economic activities in the whole of the Community, a continued and balanced expansion, increased stability, an accelerated rise in the standard of living and closer relations between the countries it brings together, through the establishment of a common market and the progressive convergence of the economic policies of its member nations." This could not have been more rigorous. An internal free trade zone, armed with a common external tariff and a rule of community preference, is collectively interesting only if the economic policies of all the countries converge, and converge toward expansion, through an accelerated rise in the living standard of their producers-consumers.

Of course the growth of the EEC was not accompanied by a strict parallelism in productivity gains and buying power increases, as a family of identical regimes of accumulation. The reality was a "growth configuration" (Aglietta and Brender 1982), with virtuous circles in the non-harmonious development of the productive sectors of the different countries, the North (the Federal Republic of Germany in particular) "specializing" in the production of capital goods, and the South (France and Italy) in the production of consumer goods. Devaluations in the South enabled it to continue to export to pay for its investments despite a growth rate higher than in the North.

However, the tendency toward wage austerity, which itself derived from the decline in profitability, was compounded by the necessity of reestablishing a trade balance aggravated by the oil revenue leak; these things together broke the international virtuous circles. The cost of wages per unit product became the fundamental parameter⁹ of the international competitiveness of a national regime of accumulation. Any country attempting to safeguard its Fordist growth saw its trade balance imperiled from two directions: from prices (loss in competitiveness) and from volume (excess in importing).

The gradual emergence of austerity policies to a position of dominance was the worst form of protectionism: competition through a series of low wage cost measures, either through a decrease in real incomes or through an accelerated rise in productivity. The idea was seductive: what was lost on the domestic market (through the shrinking of demand) would be regained on the world market (through conquests of market segments). But when all countries did the same thing, this form of "international competitive regulation" could have only one

outcome, stagnation, and even general recession. Econometrics seems to indicate that from the standpoint of employment this policy is rarely efficacious even in a country that is "more austere" than the others (Boyer and Petit 1984).

2.5. A transitional configuration: social-democratic crisis management and peripheral Fordism (1975-1979)

The depressive mechanism we have just outlined did not produce all its effects immediately. Social-democratic governments faithful to Keynesianism and confident in the automatic resumption of Fordist growth first dominated the capitalist industrial world. Growth followed credit at rates that might have appeared quite satisfactory before 1914. The principal locomotive of this recrudescence of Fordism was Jimmy Carter's United States, which pumped credit money of universally acknowledged validity into the world at the price of discretionary issue. In the domestic economy, the United States managed to create millions of jobs (essentially tertiary) despite or rather thanks to a remarkable absence of productivity gains. Western Europe and especially Japan provided the machinery and equipment not only for the United States but also to the OPEC countries, the Eastern countries, and above all the countries of the South which adopted in turn a variety of the Fordist model.

This "peripheral Fordism" was based on the adoption of a model of Fordist industrialization focusing on the immediate process of production, but only very partially (and in the extreme case not at all) on a regulation of the wage relation (Lipietz 1985a). Thus, schematically, the following configuration emerged:

—The OECD countries, especially the United States, pursued a growth driven by a slowed but not declining consumption, with minor gains in productivity and slowed capital investment.

—These countries paid for their imports on credit, and hence were instrumental in the proliferation of an international money of credit (Eurodollars) based on the American national money of credit.

—These liquidities, lent by banks of trade-surplus countries (OPEC and Japan) to certain countries in the South (the newly industrializing countries, NICs), permitted them to purchase machinery in the OECD area on credit.

—The NICs hoped to repay these loans by selling their manufactured products to the OECD and OPEC countries, a reasonable bet for two reasons: The gains in productivity in these "new" countries were very rapid (whereas productivity had slowed down considerably in the North) and their hourly wage costs were five to ten times lower. And the world market was still expanding owing to "social-democratic crisis management."

In this transitory but very fragile configuration the NICs were able to attain growth rates on the order of 10 percent per year—not bad for a "major crisis"!

2.6. *A useless catastrophe: the monetarist shock (1980–1983)*

The flaws in this regime were evident:

—The “safety net” of monopolist regulation in the North may have prevented a depression, but it also impeded the redeployment toward new norms of production and consumption by the rigidity it conferred on labor and on the allocation of capital among the different branches of production.

—The international money of credit, like every money of credit, was based on the wager that the regime of accumulation would resume functioning, and that the country issuing this money (the United States) would be able unconditionally to supply a counterpart in competitive goods for the monetary tokens issued. Toward the end of the 1970s, it was clear that neither of these conditions held true. Growth remained mediocre, productivity gains continued to slow down, capital per capita continued to accelerate, and the American currency became more and more contested and saw its international purchasing power collapse.

The accession to power of monetarist coalitions in Great Britain, with the victory of the Conservatives, and in the United States, with Volker’s chairmanship of the Fed and then Reagan’s presidency, reflected this admission of impotence. Ideas of liberalism took over simply to fill the void: the mere play of market forces would select firms which were initiating forward-looking policies, eliminate the scourges of the past, and reestablish the compatibility of behavior.

By cutbacks in welfare state spending, and by blocking the “pseudovalidation” of values in process based on the Fordist regime of accumulation (by reducing the issue of credit money) these two coalitions in a few months wiped out the growth of the five preceding years in their own countries. In the process they set off a rather complex chain reaction (Aglietta and Brender 1982; Lipietz 1983b). Not only did they compel all other countries to abandon social-democratic crisis management (including Mitterand’s France [Lipietz 1984]) through the “austerity-internationalization” mechanism, but by doing this they dried up the creation of international credit money by making the OPEC surpluses disappear. With credit hard to get and expensive, and world demand declining at an accelerated pace, peripheral Fordism found itself unable to pay its debts.

In August 1982 Mexico declared a moratorium on payments, thereby giving the signal for a generalized insolvency. The world was on the verge of a financial crash. The Reagan administration rejected monetarism, forced the world banking system to accept a general rescheduling of the debt of the Third World, and made a violent move back to Kennedy-like Keynesianism in the domestic economy. Tax cuts and increased military spending caused a gigantic budget deficit financed through the largesse of the Federal Reserve Bank. A “boom” sustained largely by household consumption (specifically housing con-

struction) restored American industry to the 1979 level in one year (1983). The considerable external deficit which resulted broke the recession in the OECD countries, with a recovery driven by exports in Japan, and by consumption and housing in Germany.

2.7. *General impasse*

We shall not here study in detail the series of micro-cycles after 1983. Having abandoned extreme monetarism, and having restimulated its economy through “military Keynesianism,” the United States of course found itself with a formidable trade deficit, aggravated further by the overvaluation of its currency, until 1985. But this was not a return to the Carter years: American society emerged from the monetarist shock profoundly stratified, with the wage relation inherited from the New Deal deeply eroded by the growth of a precarious sector.

The gigantic debt that resulted from the deficit and from this polarization allows us to raise the ironic question, whether the United States is not “the Brazil of the 1980s” (Lipietz 1985a). In any case, it has been clear since 1985 that the monetarist cure did not make possible a new, effective, regime of accumulation.

The United States administration laid the responsibility for this on the lack of international regulation. The Baker Plan proposed to stimulate international prevalidation by private banks (without making place for the establishment of international pseudovalidation: hence its failure). Throughout 1986, this administration attempted to balance its foreign accounts by a maximum devaluation, but American industrial competitiveness was too eroded for the price effects of this to be sufficient. The administration then attempted to use the threat of protectionism to force the two other world centers, Germany and Japan, to restimulate their economies, thereby justifying the Keynesian discourse of a concerted world recovery, without, however, any great success.

It is clear that in one aspect (the perverse mechanism of internationalization of austerity) the crisis calls for the institution of a “world Keynesian regulation” with all that that implies (world credit currency, coordination of expansionist policies). But this also brings up questions concerning the “productive” aspect of the crisis in Fordism. Monetarist liberalism supposes that the “technological revolution” will “naturally” furnish a solution to this problem. We shall conclude by examining this point.

3. *A technological way out of the crisis?*¹⁰

The faith in a new model of development contained potentially in the technological revolution has been no better epitomized than in a book that made a great impression in France before the electoral victory of the Left: *La crise du XX siècle*. Drawing on and sometimes misrepresenting the works of theorists of intensive accumulation, Jean Hervé Lorenzi et al. (1980) summed up the crisis in

three points: productivity was too low, fixed capital too heavy, and the unproductive tertiary sector overinflated. But electronics would make it possible to increase productivity (including, massively, in the tertiary sector) and hence to diminish costs through increasing buying power; to lower the cost of fixed capital and hence to hike the rate of self-financing; and to create new needs and new goods.

Thus we seem to have a new model very like the preceding regime of accumulation, centered on mass production and consumption, *but* with new products and processes, and a new central branch of production including electronics, office computerization, telematics, and automation. The crisis would only be a crisis of switching from one model to another.

It is this somewhat simplistic (and also simplified) optimism we wish to question here. The point of disagreement is the automatic and linear link we are asked to accept between the discovery of a technology and the formation of a model of development.

Between technology and a model of development there are a series of links—social relations. Between technology and its practical implementation, there are the *immediate relations of production* (who decides how the workforce will be organized?), and between production and economy there are the *socioeconomic relations of the totality* (will there be enough consumers, or investors? to produce what? to ensure what form of full employment?). In other words, a new regime of accumulation and a new mode of regulation, in particular regulation of the wage relation (and why not other relations of production, too?), must still be invented.

And when a new model of development has been conceived, how does one move from the old one, which is dying, to the new one having such difficulty to be born? How to manage, financially and especially in human terms, the restructurings involved?

Furthermore, who are the subjects of such a transformation? Since the cult of the Company is riding high, while self-management and alternative forms of activity on the part of the wage laborers are at their lowest point, it is likely that social relations will remain essentially *renovated wage relations*. But nothing demonstrates that the state, or the pair companies/wage workers, regulated by the market, is in a position to shoulder these changes, and it is not even certain that this would be desirable.¹¹ Here too innovations will be necessary.

We cannot here take up the last two series of questions or the question of the relations between different socioeconomic formations, North-North, North-South, etc.¹² We shall thus limit ourselves to the problems posed by the "future model of informationalized capitalist development."

3.1. *New labor relations*

Let us begin with electronics, a technology that is more advanced and more widespread than genetic biology or nuclear energy. Passing over its applications

in the tertiary sector (office work, education, health), we come to the heart of the problem: the application of informatics to industry, "the informatics of production."

What does informatics bring that is new? Not so much increases in productivity per second of machine time used as essentially two things: the possibility of using the machines in a shop *full time*, and the possibility of making the shop *flexible* (Coriat 1983). A Fordist shop, based on a double specialization of machinery and human beings, made poor use of the time of both: waits between two operations, intermediate stocks which piled up, the impossibility of balancing workstations. Shop automation will make possible a leap forward in the fluidity of the productive process: each piece arrives at its place "just in time," and the elementary operations link up in a more streamlined manner. This is the great lodestone of productivity or rather profitability which informatics brings.

The initial investments are costly: networks of chain-driven cars, central and peripheral computers, etc. But they are all used full-time.

But that is not all. Electronics makes machine systems especially *flexible*. The principle of automation entered the factory a long time ago; human beings in effect manufactured machines that by themselves emulated human gestures, e.g., the automobile factory conveyor belts and press shops. But these enormous installations only knew how to perform one series of operations, producing always the same product. A robot, however, can adapt, change tools, pass from one task to another, through rapid reprogramming. The robotized shop can thus adapt to a fluctuating demand, producing one small series after another.

But a first comment is in order: to install electronics in a factory requires a formidable mobilization and recomposition of *all* know-how, including the thousands of spontaneous actions through which the most Taylorized worker adjusts instinctively by virtue of his/her experience the instructions of the methods office, filling up the gaps in the scientific organization of labor, but including especially the industrial knowledge accumulated by professional workers and technicians. *There can be no introduction of production informatics without a new systematization of know-how*, even if turnkey factors are bought abroad. To manufacture robots and put them to work requires above all the mobilization of producers in the continuity of their experience, in partnership between quasi-integrated enterprises (Leborgne 1987).

And secondly: even when a robotized shop is installed, even when it uses a technology without any previous human equivalent (such as laser cutting), the intervention of the skilled collective worker is indispensable even if it in theory no longer has any operation to perform. This is what has been demonstrated by the example of petrochemicals, a "process" industry which represents the ideal extreme of an entirely automated manufacturing or assembly shop, where worker "instinct" remains indispensable for the whole to function well, most often in contradiction of the instructions of the engineers. This requisite know-how is not necessarily intellectualized: it is *practical knowledge*.

In fact computer-assisted production (like computerized office work) can evolve in two directions: the reconstruction of Fordist discipline with unskilled workers filling gaps in a chain of very complex robots designed by engineers and assembled by technicians, or else the development of multiskilled teams to watch over the entire process.

This is what is at stake in an immense social struggle proclaimed by the invasion of the robots. The interest of workers lies clearly in the second direction. The interest of the employers (or technostructure) is ambiguous. Only the second path will open up what *l'Usine Nouvelle* (July 1983) calls "the mine of worker productivity."

But this neo-social-democratic logic is totally opposed to employer traditions, to the culture of control, to social relations of labor, to the technical apparatuses inherited from Fordism, especially in France, where an organization of labor based on racism and fragmentation is showing itself to be in contradiction with productivity and quality. The potential mines of productivity can only be tapped by an overall negotiation of profit shares, a revision of classifications, the abolition of despotic hierarchy, and the invention of a "career profile" for the worker which enriches him with knowledge at the same time as he enriches his firm (Aoki 1986). This is "social technology," which does not have much to do with informatics in the strict sense.

The counterpart to these gains in productivity on the side of social demand must still be found. This brings us to the problem of regulation of the totality: does production informatics mean mass production and consumption assuring full employment?

3.2. A new distribution of productivity gains

Today, in a Europe in crisis, automobile firms such as Volvo or Mercedes, and manufacturers and sellers of luxury products in general, are prospering. There is a demand for the "top of the line" and the "small series" no longer require the craftsman at all. Production informatics, by the very fact of its flexibility, is satisfied with a succession of small series in accordance with customer fashions. Contrary to the old Fordism, it no longer requires the development of mass production, and hence mass consumption. As Benjamin Coriat observes, it makes it possible to imagine "prosperous enterprises in a stagnant world." The example of Japan, flooding the world with small cars, does not contradict this observation. Japanese capitalism seeks its customers outside of its own economy; it is parasitic on a world demand created otherwise than by the wages it pays (until 1986). The Japanese model of development is therefore not generalizable: there can be only one Japan. Let us rather try to think about a cohesive whole (Europe, North America) and imagine a complete regime of accumulation, hiring, investing, and producing for itself.

If the new model of development which production informatics permits does

not require an increase in the buying power of its workers to turn over its products, social struggles could no doubt force this upon it. The question remains, can the technological revolution pay for what Fordism can no longer pay for, and if so, will it make it possible to expand buying power enough to justify expanded employment? This is an extremely complicated question.

To pursue this example, does production informatics pay, i.e., does it accelerate increases in productivity? Clearly it has not done so so far (since the increases in productivity have not been spread around the world at the same pace as in the 1960s, except through the rationalization and closing of old installations, as in England). But this is perhaps because it is not yet widespread enough. The *direct* productivity of robotized labor is growing manifestly (hence the redundancies in the automobile industry, which requires less work for the same number of cars). But is the total cost (cost of the robot plus cost of the worker) declining? This is not so evident since enterprises which are robotizing often do it to "keep pace," to get rid of restless workers (as in Fiat), etc. Robotization obeys a logic of social struggle within the enterprise as much as the logic of strict questions of profitability.

But let us say that *total* productivity (volume of commodities relative to the labor incorporated in the robot plus direct labor) is increasing: this is in any case certain on the average and over the long term, even if we do not know the rate of this increase. This means that production informatics abolishes a net number of jobs for the same quantity of finished products. To say that "technical progress does not eliminate jobs because people are necessary to build machinery" is a sophism. If the same total labor were necessary for the same product, with or without robots, companies would not robotize. Technical progress permits the creation of jobs if the demand for products increases, or if the labor time decreases: the entire history of capitalism is a combination of these two movements over the long periods.

It is true (and this brings us back to the celebrated polemics among Marxists at the beginning of the century) that a reproduction scheme based on pure accumulation of capital goods is conceivable without expanding final per capita consumption. In fact, such regimes are not stable except in the case of state capitalism such as in Stalinist Russia. Let us leave aside this schoolbook case, which is neither desirable nor likely.

In a predominantly liberal capitalism, investment is made only with a view to future production, called for by final demand, and it is this that justifies investments. Will production informatics permit an increased demand through an increase in wages, which will justify ultra-modern investments and the creation of new jobs? In other words, will it make it possible to reconstitute the Fordist virtuous circle by "sharing the fruits of growth?" Creating productivity gains is not sufficient for this. Such gains must also be at least greater than the increase in the costs of robotization, so that the expanded production of each wage laborer can pay for investments in production informatics and for the increase in the

worker's buying power. If the costs of production informatics per producer rise too fast, the gains in productivity will serve to pay for the investment, and a part of the profit (whether of private firms or the state is of no difference) will increase relative to wages, and hence purchasing power will increase less rapidly than productivity, which would eliminate jobs.

It is therefore quite possible that the "technological revolution" in progress will leave the capitalist countries in the midst of the crisis of Fordism, with small gains in buying power and increasing unemployment, even in a closed economy disengaged from the vicious circle of the internationalization of austerity. It is therefore crucial to know if the costs in capital investment per capita in the technological revolution are growing more rapidly or more slowly than the productivity to which it gives rise.

Actually we know strictly nothing about this. It is irrelevant to point out the continuing decline in the prices of computers: the electronics accounts for only 15 percent of the price of a robot, there are more than robots in automatic shops, all of industry will not be automated, and the economy will not be reduced to the manufacturing industries. Currently available aggregate statistics indicate, on the contrary, that at the present moment more and more capital investment per capita is necessary and that such investment does not result in commensurate increases in productivity, even if the situation is deteriorating less rapidly than in the 1970s (CEPII 1984).

One case is an exception: Japan. Japan in particular is distinguished by major innovations in professional relations, and in the *controlled involvement* of workers (Aoki 1986). But Japan is still unable to expand its own internal market.¹³

The massive increase in general buying power is therefore probably not the way to absorb increases in productivity brought about by the technological revolution. There is a very great risk of having a majority of workers with stagnant incomes or incomes that are rising insignificantly coexisting with a well-off minority enjoying all the clever gadgets of the technological revolution and with another growing minority reduced to unemployment because the increase in investments does not suffice to create new jobs. In all likelihood, it will not be possible to absorb the gains in productivity brought about by the technological revolution by significantly increasing the average buying power of every wage (even in an isolated instance) if it is necessary to finance both modernization and the creation of new jobs. Since the technological revolution does cause increases in productivity in spite of everything, these gains will therefore have to be absorbed by a massive reduction in working hours. And this will require a general reshaping of the regulation of the wage relation.

4. In place of a conclusion

We could continue this series of questions on the "technological way out of the crisis" (what new needs will be satisfied? What techniques are to be adopted in

the range provided by scientific knowledge? What will be the system of international relations? etc.). But the examples given are sufficient to establish that if there is a way out of the crisis, it will involve innovation with regard to social relations and modes of regulation of these relations much more than with regard to strictly technological matters (whether with regard to products or processes).

There is no possibility of turning back the clock, and dismissing the entire chronicle of technical and scientific innovations, regarding the discoveries of the Carnot principle and the steam engine, electromagnetism, the electric motor, the internal combustion engine, the photoelectric effect, nuclear energy, etc., as insignificant. We have simply wished to stress that:

—The history of mankind, even reduced to economic history, is a *social* history, the driving force of which lies just as much in struggles for control of the process of social production and reproduction, and even in the evolution of habits and conventions, as in a linear (or "clustered") development of productive forces.

—Relatively stable growth phases sanction the stabilization of a regime of accumulation, accepted as a model of development, buttressed by institutional forms resulting in a mode of regulation.

—Major crises result from a deregulation of social relations, whether within the immediate process of production, at the level of the mode of regulation, at both levels at the same time, or in the contradiction between the regime of accumulation and mode of regulation.

—Several phases may occur within the same major crisis, and an unreflective challenge to a mode of regulation in the name of an unfounded faith in the virtues of liberalism can have catastrophic consequences.

—Even if current technological knowledge opens the door to a way out of the crisis, the key to the door must be found in the social movement.

Notes

1. The "founding" texts are the thesis of M. Aglietta (1974) and the study by CEPREMAP (1977) which formed the basis for books by Aglietta (1976), Boyer and Mistral (1978), and Lipietz (1979, 1983).

2. We refer to those by J. Mistral and A. Lipietz at CEPREMAP, and those carried out under the direction of Aglietta and Brender at CEPII.

3. The text of this first part by no means claims to represent a consensus within the "Regulation School." A complete version will be found in Lipietz (1985b). We would like to acknowledge in passing our debt to and divergences from the structural Marxism of the preceding period (Althusser, Balibar, Bettelheim, etc.) and also our debt to Gramsci, Bourdieu, etc.

4. For a more exhaustive analysis of the dangers of these conceptions with regard to "imperialist" relations, see Lipietz (1985).

5. On these controversial points (value, price, money) among the regulation theorists, who are not (or no longer are) all Marxists, see Aglietta and Orlean (1982) and Lipietz (1983a).

6. A few comments on the particularities of regulation in state capitalism will be

found in Leborgne and Lipietz (1983) and especially in Chavance (1980).

7. On the process of the emergence of Taylorism and then of Fordism see Coriat (1979), Boyer (1984), and Linhart (1983).

8. It was for this reason that these authors introduced and developed the notion of "institutionalized compromise."

9. Fundamental but not exclusive. The "quality" of international involvement must also be taken into account: this is the focal point of a number of studies done at CEPRII and CEPREMAP.

10. In this section we shall take up some of the conclusions of Lipietz (1984).

11. See Boyer and Mistral (1984) and Lipietz (1984).

12. In the absence of international "collective agreements" direct forms of control of trade flows will irresistibly assert themselves between areas practicing codevelopment. See Lipietz (1985a, 1987).

13. This seems to be less true since 1987.

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