

INFORMATION: A FACTOR OF ECONOMIC PROGRESS

I. CYBERNETIC AND ECONOMIC INFORMATION

Cyberneticians define information and the quantity of information in mathematical terms, apprehending them independently from their meaning. When they put aside their conceptualizations and symbolizations, foreign to the semantic content of messages, we see them hesitant about their domain of prospection.

Economic information is an object of knowledge; it is provided with a meaning for an individual, for an enterprise, for a unit of consumption. This object of knowledge is integrated with respect to the agent in one of two ways. The information of an agent may be said to be the body of the variables which constitute his economic horizon. In another way, however, it is the body of variables which he takes into effective consideration in forming the plan of a determinate economic action and in revising this plan as it proceeds.

In a somewhat different sort of analysis we might say that each agent has his "field of possibles" dependent upon his information, his imagination, and his capacity for synthesis. The information is an ensemble of

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objects of knowledge, the imagination proposes plans by combination, and the capacity for synthesis composes a structure of elements following the plan decided upon. Each agent retains from among the possible plans one constituted by means of information bearing on the present and information concerning the future. The aim or result anticipated in the plan is a modification of the organism forming it and of the environment of this organism, that is to say, an "imagined information."¹

So far it has been supposed that the plan under consideration is not conceived with a view toward the producing or selling of information: reasoning has been rather on the level of an automobile manufacturer or of a dealer in refrigerators.

Information is still integrated on various levels today, as the very object of production and exchange. The press, advertising, and public relations firms sell information or, more precisely, the supports for information. Consulting and social engineers, technical, fiscal, and juridical counselors, accountants, and marketing specialists procure information in exchange for money, as do professors, lawyers, doctors, scientific researchers, and laboratory workers.

The producer and seller of a piece of goods which is not primarily an information or a support for information acquires information in order to form and then correct his plan; he sells information in the form of advertising or in other forms in order to reach his goal; he buys more information in order to know exactly the results of his management and to improve them. As for the producer and vender of information, the newspaper publisher, the advertising man, the public relations expert, or the public opinion pollster, they act in the same way, except that information itself constitutes their merchandise.

When the economy is decentralized and based on private enterprise, as is the case in the highly developed countries of the West, this goods or economic service called "information" has a cost and yields a return. Subject to the law of the system, it is produced and traded only if and insofar as it yields a net profit beyond its cost. The offers and bids which determine the prices and costs of information in all its forms depend on the preferences and the resources of organisms as observed in real economies; they are seen not to operate in conditions resembling the perfect markets of theoretical competition. Manufacturers and dealers, industrialists and merchants, are highly dissimilar as to the size of their enterprises, their power in negotiations and contracts, and their place in the national and inter-

1. Louis Couffignal, "La Cybernétique," *Encyclopédie française* (Paris, 1957).

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national economy; therefore, they also have dissimilar capacities to buy, to create, and to spread information. Likewise, the manufacturers and sellers of information, the entrepreneurs of the press and of advertising, differ widely both among themselves and in relation to other industrialists and businessmen.

Information circulates, then, in such economic systems as monopolistic competition, oligopolies, and ententes. Like contemporary capitalism, the increase in all kinds of information reaching the public has spread under the laws of monopoly and concentration. The largest organisms, those most powerful and most influential by very reason of the sector of activity to which they belong, wield an economic power and a nameless power which is a function of their capacity to be informed and to inform.

Today's capitalism, better informed than preceding economies, is not, for all that, more peaceful. The best information services can be acquired by the largest and most powerful, who take on the best personnel for technical research, forecasting, market research, advertising, public relations, and the best intermediaries between their companies and the government; they can assure themselves of strategic positions in the press.

This concentration of the power to collect, to create, and to spread information is an urgent danger of monopolistic capitalism. The state in the Western democracies is certainly not independent of large interests, which often besiege and even take over the government. Cross-currents of opinion and partisan counterattacks risk a weakening of political action or an onslaught of staggering blows depriving the government of continued effectiveness. This realistic hypothesis must be borne in mind if we are to understand how the state can act, through information, to serve economic progress.

The state is never neutral, any more than is the information it distributes. Expression of the dominant classes, it gathers and spreads an information which ordinarily does not contradict, but rather serves, the interests of these classes. However, the dominant classes in contemporary economies and democracies are forced to come to terms with the organized proletariat and with groups enjoying the least favor. In free regimes these elements, too, have some means of gathering and spreading information. Then, too, the dominant classes do not form a homogeneous whole; their component parts, in their contradictory efforts concerning information, give to a fraction of the public and to well-informed observers the means of understanding the hidden aspects of economic alli-

ances and struggles. Finally, statistics and public accounting, however removed they may be from the attention of the public, provide for the initiate occasions for quantitative and rational discussion.

The struggle of those most disfavored by the information (among other means) remains the principal guaranty against the lies and the ruses of "general-interest" information procured by the government in a time of monopolistic capitalism. The opinion organizations not only do not present in and of themselves the guaranty that this struggle will be effectively carried out but are on many occasions the means used to paralyze the struggle.

Arbitration, where information is concerned, is therefore necessary in monopolistic capitalism as well as in every other field, but this is almost impossible in the sense that governments, legislative assemblies, and administrations reflect to a large degree the very relations of forces which they are supposed to arbitrate. Let it be added that to arbitrate is neither to destroy nor to block—those initiatives are currently taken by disfavored groups and by the organized proletariat, as well as by the parties which serve it or use it. The doctrine of these parties is, indeed, that, all arbitration being a capitalistic bait, it is fitting to stop the machine or to throw it out of kilter as often as strategy may so dictate.

It is under these extremely difficult conditions that an economic information superior to that which is gathered and spread by such opposing interests must be established. No society, whether capitalist or not, is homogeneous or "reconciled" in the spontaneous movements of its functioning and of its historical development.

Economic progress is dependent on an information entirely different from the informations governed by the profit motive and by the particular advantages of groups and categories. And this word "progress," often loosely employed, deserves careful examination.

II. ECONOMIC PROGRESSES AND ECONOMIC PROGRESS

For a national community, economic "progresses" are measured by well-known statistical procedures. Real average product or real average disposable income or real average expenditure for consumption items rises. Consumption budgets include items of improved quality, and the relative share of a characteristic part of budgets—for example, expenditures for food—declines. In real total product the relative share for "services" increases, as does that of a "tertiary" sector, characterized ordinarily without too much intellectual exactitude and occasionally including replacement

figures. The economy functions in such a way that over a long period the real average revenue increases, the real average wage increases, the length of the average workday decreases, and the workingman's leisure time increases. These indexes of progress have been studied; their statistical use is well known. On another occasion I explained the insufficiencies of each of these indexes and their inability to show how the total picture of an economy can be called "progressive."²

I intend to show forcefully that the distinction between singular and plural (progress, progresses) is not an artificial one or a trick of terminology. It clearly underlines a basic position, calling attention to basic difficulties and doing so with a view toward proposing a well-defined solution to these difficulties. Economic progresses are the changes in values of the indexes which I have just briefly summarized. They are, from another point of view, gains in well-being and in freedom for various particular social groups. Economic progresses for whom? This is the first question in any analysis of a concrete situation. What classes, which groups, receive the fruits of the progresses, in what proportions, at what rates? Who bears the burdens of the progresses? Economic progress cannot be said to be present in a society until it has been shown how the economic novelty emerges in it, how it is propagated and spreads its fruits, and what sense, what meaning, of economic life is inscribed in the institutions, collective representations, and real behavior.

In our Western societies, as a matter of pure fact, progress is understood by moral philosophers and obscurely felt by the masses to be an essentially collective movement; it proceeds from the group, and it is destined for the group. In vain are the moral philosophies and the religions of the Occident hypocritically deformed and exploited. They are tirelessly reinterpreted and compared with the new aspects of societies remodeled in social struggles; these philosophies and religions contest the claim of particular individuals and groups to present themselves as exclusive authors of progresses, and they combat the efforts made by both groups and individuals to use progress to their own benefit. These forces, strange to the market place, act on minds and change institutions; they are added to the forces of competition among social groups to spread novelty (the new idea, innovation) and to diffuse its fruits (increased well-being and enhanced freedom). Neither the appearance nor the propagation of innovation is sepa-

2. François Perroux, "Les Mesures statistiques des progrès économiques et l'idée d'économie progressive," *Cahiers de l'Institut de Science Économique Appliquée*, Series I: *Le Progrès économique*, No. 1, December, 1956.

able from the perceived and experienced meaning of economic activities.

An economy is progressive when effective innovation, let us say that capable of increasing real productivity and a real product, spreads and propagates its fruits, with the least delay and at the least social cost, in a network of economic relationships whose sense is universalized, that is, becomes intelligible and acceptable to all, especially to the least favored.

This is what I mean by progress, and the subject I have chosen can henceforth be formulated with some degree of precision:

1. The increase of informations of all kinds which are available to the economies of the twentieth century increases their capacity for economic creation, for applying new ideas, and for innovation.

2. In monopolistic capitalism, even more than in competitive capitalism, the inequalities of large units, among themselves and in relation to small and medium-sized units, makes indispensable an information distinct from that gathered and diffused by private interests.

3. This is difficult because the state is largely dependent on monopolistic capitalism. It can, however, uncommit itself from this dependence in struggles between social groups, and, thanks to the co-operation of elite groups among technicians, with the organized proletariat and defense groups of the least favored.

4. This militant and always-threatened information is one of the main chances of highest capacity for economic creation in modern societies, of the best propagation within these societies, of innovation and its fruits, and of the search for a meaning of economic activity intelligible to all and acceptable to everyone.

Information "of general interest," "demystified" in and through social conflicts and, no less, by new gains in objective knowledge, is linked to each of the aspects of progress: to creation, that is, to the ensemble of activities raised and put into effect by effective innovations, to the propagation of the innovation and of its fruits, and to the meaning intelligible to all and sanctioned by the concrete behaviors of an order of economic activity. The analysis is to be applied to each of these aspects.

III. THE CAPACITY FOR ECONOMIC CREATION

Scientific economics has constructed models in which, coefficients of production being given and constant, net additional investment is the motive of economic development and progress; this investment operating, and the propensity to expenditure (for consumer items) being determined and

invariable, the growth of real income is a multiple of the growth of real net investment. The multiplication mechanism of J. M. Keynes will be recognized. Now this multiplication effect is certain and univocal only if the given initial state of the economy recognizes an incomplete utilization of resources and if the conditions of constant coefficients referred to above are present as well.

If, in the static and stationary state in which resources are fully utilized and, to the optimum degree, a net monetary investment is accomplished, it leads to a rise in prices but not in real product, unless it incorporates innovations which make finally available to the consumer an equal quantity or an increased quantity of the desired product at lower costs and prices. Otherwise, the net monetary investment leads to a less effective use of resources, and real product is diminished.

For a given population, then, average real product increases or not, depending on whether the net additional investment does or does not lead to effective innovations. At the same time a given net additional investment produces more or less of an increase in net real product and average real product insofar as it contains and propagates more or fewer effective innovations.

Effective innovation is that which lowers costs and prices of goods and services and thereby increases the total product available in an economy, calculated in terms of current prices. The effectiveness of innovation could never be appreciated in isolation, in the narrow space of its earliest and immediate effect; innovations engender other innovations in zones far removed from the place of their first appearance. Major innovations give rise to effective innovations in a large number of industries. The motive force of economic progresses, beyond the mechanical actions of multiplication by net additional investment, should therefore be sought in effective innovation. The power of economic creation is identified with that of giving rise to effective innovations.

The increase of economic information currently available, its improved precision and better transmission, increases the creative power of private enterprises and of governmental and other administrative entities. A factory owner or other head of management having a given degree of imagination and aptitude for selection and synthesis has more chance of innovating effectively as his information becomes richer. Better informed, he has a choice among various technical procedures; he is familiar with the organizational modalities of interpersonal relationships in his firm; he is informed about the environment of this organism and foresees its probable transformations; he is not ignorant of the results of past and

present management and can extrapolate them under various conditions. Despite the quality of recent efforts to raise the return from public administrations, we are still accustomed to turn to industry and commerce for our examples concerning the virtue of these multiple informations; it is however, certain that the analysis is no less applicable to political and public services. In both domains, actually, a manager, during at least a part of his professional career, is likely to improve his powers of synthesis and perhaps his aptitude for imagining new schemes as well, to develop his initial capacities by perseverance in the manipulation of "rich" information; thus the manager's creative aptitude is dynamically strengthened.

On the other hand, in administrations as well as in businesses, information machines perform the functions of registration, classification, conservation, and calculation which were formerly performed by human minds; they do this with greater speed, power, and precision. Since these problems and the groups of operations necessary to resolve them are imposed on the machines by men in technically rigorous forms, a type of creator is henceforth required who will no doubt be more and more clearly separated from the man who is just a calculator; he must be, to state it briefly, an imaginative man who expresses his poetry in the form of equations.

Organizations are needed in services which use electronic machines and introduce new divisions of labor. By the appropriate organization for the circuit of information, the manager can render his authority more effective. By better circulation of information within the unit, the influences fortunately exercised by capacities and competencies independent of official hierarchies can yield their fruits. In all echelons and in all sections of the directing teams, the capacity to create can be unburdened of the most automatic and mechanical operations.

Thanks to new techniques, perspectives likely to resolve many acute difficulties are opening up. Chief among these difficulties have been insufficient internal co-ordinations within the great public and private bodies, the accumulation of unused and scattered bits of information, the practical impossibility, where there are numerous heads of service, for all to be possessed of the background required for giving instructions or orders with full knowledge of what is involved, and the discouraged feeling of the most responsible chiefs unable to find time to take care of current matters, maintain a minimum level of discipline, assimilate new materials in their professional specialties, and find the peaceful hours so conducive to creative planning.

It is not the capacity to create in one unit but rather in co-ordinated

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bodies of different units that modern information, with its techniques and equipment, is developing. Is it succeeding? A growth of real product is resulting, and, at least for the present, an accelerated rate of growth.

I have sketched this future for both private and public organisms. The fact is that at no time in modern history has the oversimplified contrast between government and commerce been verifiable; much less so that favorite contrast made by certain polemicists between the economic sterility of the state and the exclusive fecundity of private enterprise. Eighteenth-century industry in Great Britain was not launched exclusively by competition or by private entrepreneurs quite apart from the collective monopolies of the nation and from the decisions of the state, which provided the means for expansion.³

The greatest capitalism in the world today calls itself "individualist" and presents itself as liberal, but its economic creation is fundamentally the result of close co-operation, even symbiosis, between the state and the large "corporations."

The creation of information, discovery and invention in the realm of basic science and its applications, proceeds largely and ever increasingly from publicly financed research. Of the total spent for organized research, 83 per cent came from the federal government between 1940 and 1945, compared to 19 per cent in 1940 and 14 per cent in 1930. Technical progress in metallurgy, explosives, aviation, and navigation was nourished by the war and is linked to public spending. The state is interested in the stimulation of pure research: it created the National Science Foundation in 1950. It is also interested in encouraging the applications of research: in 1946 it founded the American Research and Development Corporation, which makes funds available to firms taking exceptional risks in breaking new ground.

Major innovations, such as the application of thermonuclear energy and automation, are developed in large measure through government initiative, orders, and funds. The disruptive effects of the application of these innovations are foreseen and estimated in public discussions, and the distribution of the costs and fruits of progress is no longer intrusted to the market place. "Technological change," said the spokesman of the United Auto Workers before the commission investigating automation, "will permit us to raise our standard of living, but society's advance must not be made at the expense of the human being." "The real question,"

3. For more details cf. François Perroux, "La Théorie générale du progrès économique, I: Les Composants. 1. La Création," *Cahiers de l'Institut de Science Économique Appliquée*, 1957.

declared Mr. Nourse, "is to know how the costs of progress should be divided between private and public bodies." It is now understood that the state must be the associate of industry whenever necessary, in order to reduce the possibilities of technological unemployment caused by major innovations; if their application does not follow, it will not be because the difficulty and the means of resolving the problem have not been foreseen.

It has also been realized that wage levels and increased leisure can no longer be determined in the most progressive industries without regard to the rest of the nation. Beyond a certain level of real wages, the continued advance for the most highly qualified and most favored workers takes the form of a shortened work week, longer vacations, and increased leisure. Is this politically possible and in accordance with officially accepted social morality, when a third of the population is condemned to a standard of life which that very morality has judged to be insufficient? This question is raised in an important official report on automation, and it can scarcely be evaded.

If the most fortunate unions accept a shorter leisure period in consideration of the needs of others, they will be showing a willingness to sacrifice to national solidarity the distribution system of the market economy. If they refuse, they break not only with national solidarity but also with class solidarity and show that a pressure of an ethical nature could better serve the proletariat than a unionism supposedly designed for the service of a whole class.

So we see that major innovations do not come exclusively from the private market, nor are they regulated by it. Their long-term realization is subject to public discussion and state control.

These same procedures are employed to correct the spontaneous movements of the cycle by means of automatic stabilizers and discretionary political moves. Everything happens under the world's greatest capitalism—despite doctrinal resistances and delays—as though not merely depression but the cycle itself were no longer considered to be superior to the will of men. Stabilization by means of forecasts and co-ordinated programs, by economic education of companies, administrations, and the public, has entered the phase of concrete reality.

In order for even these imperfect checks of long-term and short-term imbalances to come under discussion and become sharply defined as to their aims and their means, it has been and still is necessary for an economic information "of general interest" to be gathered and diffused. The general interest, the collective advantage involved, is not defined once and for all.

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It does not spring fully armed from Byzantine discussions of welfare. It is not uttered by each of the great collective partners but rather emerges little by little from their dialogues and their conflicts. It is one concrete quest in a procession of social struggles. Regulations by a blind market and a so-called natural order no longer inspire confidence. The great capitalism does not succeed in stifling an information directly contrary to the maximizing of monopoly profits. It comes up against the resistance of organized labor. It has to deal with real basic powers in information: the power of the scholars, researchers, and technicians of pure and applied science, the power of several political and administrative elites armed with a scientifically verifiable knowledge.

American capitalism becomes less unintelligible in and through the opposition dialogues of social classes. Its functioning has some chance of being conscientiously checked on as it is first of all understood more objectively.

In the face of these changes, might one not be permitted to distinguish and contrast two types of effective economy? One, that of the first industrial revolution in Great Britain, takes advantage of the social gap between the economic creator and the executor. With difficulty, the statesman, the manufacturer, and the factory owner produce fruitful innovations. The worker, terrified by the prospect of unemployment and the workhouse, is reduced to the material status of a tool. The mainspring of this economy is coercion, and information is the property of the dominant classes.

The other economy—far from realization anywhere at all but which cannot be dismissed as a chimera thanks to observable transformations already achieved—would rest on the adherence and the participation of its performer to the work of collective creation. The function of this economy would be understood little by little and could be better and better acknowledged and explained. It would depend on an information no longer mystifying, with everyone in his place really knowing what he did, how he did it, and exerting an extra effort to accomplish the common task, beyond considerations of personal remuneration.

This economy of adherence and participation, built on an extension of positive observations, is the first figure in the sketch of a progressive economy.

IV. THE PROPAGATION OF INNOVATION AND OF ITS FRUITS

Effective innovations, the new products and procedures which bring down costs and increase total real product, do not occur everywhere at the same

time and are not uniformly distributed. Neither is the increase of real profits and real wages accomplished at the same time nor at the same rate in all segments of the economy. At a given moment of observation and during a certain period of time there is in a developing economy adjustment at points of economic progress and, continuing from these points, propagations of innovation and of its fruits.

Three important changes mark the Western economies in the twentieth century: one in the field of prices, another in the mechanisms of competition among industries,⁴ and the last in the mechanisms of distribution. These changes determine the forms of the propagation of innovation and of its fruits. An examination of each of them shows the role of information in economic progresses and that of information “of general interest” in the emergence of the progressive economy.

1. *Changes in Systems of Price*

Complete competition is pure, that is, without any admixture of monopoly, and perfect, that is, without functional defect. Under such a system, whose analytical content is known, each firm, unreservedly obedient to the indicator which is price, is not, and has no need to be, informed about the conduct of other firms, nor need it be concerned with even its own structure, which is reduced to a set of factors of production gathered under a co-ordinating power. In this sense the model describes an uninformed market. Contrary to what one is led to believe by common opinion about competition, this system when fully effective is not favorable to the formation of innovation in the individual firm or to the spreading of innovation from one individual firm to another. Under capitalism each firm innovates with a view toward profit. However, an abnormally high rate of profit is quite transitory under complete and perfect competition. Each firm has the means to innovate with the higher-than-average profits realized and accumulated. Now, in the case under consideration, these extraordinary profits are continually and rapidly eliminated. Let us add that each individual firm is so small a part of the industry that its conduct exerts no noticeable effect on other firms.

Competition needs many impurities and imperfections in order to provide an atmosphere conducive to economic progresses. These qualities, by which competition becomes once again the act of men capable of projects, and of projects incompatible with each other, may be observed in the existing markets of our time, which are informed markets.

4. Or, one might say, “in the mechanisms of the structuring of total product.”

We frequently observe industries in which companies produce diversified products and show selling costs beyond costs of production in order to increase their relative participation in the total demand. This is a somewhat roundabout way—but a meaningful one—of saying that they advertise. There are two sorts of advertising, to state the extremes: one is publicity which informs, which gives the customer an opportunity to choose wisely, and another is publicity which coerces the customer, by setting up conditioned reflexes, into buying without making a considered choice. In both cases the firm, instead of innovating effectively in the fields of technique and production, can make an effort to sell. Only a counterinformation among its customers and in the public authority can force the firm to put out new products at low production cost, instead of distributing existing products at a given production cost, by exerting an effort to sell. When there is coercive advertising, it is the two similar reactions of alert and organized customers and public authorities most attentive to productive techniques and excesses in selling technique that can preserve the consumers' capacity for discernment and prevent their being transformed into robots who purchase automatically.

Counterinformation of the parties directly concerned, the information of political and administrative bodies, and the information of public opinion are therefore decisive for the emergence and the propagation in the markets of economically effective innovation by industries whose products are differentiated and put on sale through a politics of publicity.

Competition among oligopolies, that is, among a small number of dominant firms in an industry, calls for these same observations because in most cases oligopolies offer differentiated products and use advertising. However, the domination of the market by a small number introduces important new developments. Each of the principal partners makes decisions regarding production and sale only after considering the probable decisions of the other partners. Then the effectiveness of each member in oligopolistic struggles is dependent upon its reaction time, that is, on the quality of the internal circuit of information constituted by its own company. Finally, in these same struggles, each one tries to modify to his own advantage the rules of the game set forth by the public authorities and even the structure of the partner: all actions in which information plays a privileged role. The oligopolies, enjoying abnormally high profits, provide the impetus to innovate and the means to innovate. What will this innovation be: a novelty destined to be quite temporary and harmful to a clientele destined to be subjugated or a novelty propitious to a lasting

increase of total real product placed at the disposal of all? The answer depends a great deal on the relative power of information held by each partner and on an information "of general interest" acquired and kept active by all organisms capable of judging and acting other than under the dictate of the oligopolies.

The most important aspect of this point is neglected in current price theory: in the contemporary economy oligopolies do not exist in isolation; their strategies are often laid down within economic and financial groups. The great industrial firms, banking institutions, advertising, and the press—all large enterprise and administration—are enmeshed with secret webs of interests and of information.

Everyone knows that these tacit alliances and coalitions, subject to change during a given period of time, exist; but, in view of the difficulty of objective documentation and the dangers inherent in its use, few scientific studies have been devoted to this subject. As long as this obscure zone is not lighted, we shall remain ignorant of some of the most powerful springs of innovation and its propagation under monopoly capitalism: the stakes are high enough to make it worthwhile mobilizing the proletariat's power of resistance and the relatively independent elite's capacity for curiosity and investigation.

2. *Changes in Mechanisms of Competition among Industries*

The development of a modern economy works by a change in proportions of total product, that is, of the relative participation of industries⁵ in this product. Relative product of an industry, expressed in current monetary value or constant prices, increases or diminishes. New industries slowly supplant some industries and revive others. These changes in the structures of production are inseparable from the increase of total real product and average real product; through them, newness is propagated in the body economic, in a given period of time or from one period to another.

An important part of the process is explained in the broad scheme of competition among industries. Since total demand is supposed to be increasing for autonomous reasons, an industry increases its relative participation in this increasing demand by lowering its production costs and

5. Empirically defined. One industry sells a product different from the product of another industry in technical and economic characteristics. The reader is here referred to the delimitation of industries as presented in useful statistics, not to the theoretical concept of an industry defined by a homogeneous product or by a degree of differentiation of the product analytically determined.

its selling prices. The consumer exercises his demand in favor of these progressive industries; they derive from innovation higher-than-normal profits; they attract to themselves a relatively greater quantity of the best factors of production; they can proceed to relatively more widespread and more intense research and to net additional investments relatively more important and more effective. Each of them is limited in its expansion only by the effort of its rivals, by saturation of the particular demand made of it, and by the emergence of new industries.

In this scheme of things, in order for the best dynamic distribution of resources to be operative, it is necessary and sufficient that each industry be informed of realizable techniques and of the probable preferences of consumers; that each consumer really knows what he wants and the use he wishes to make of any surplus funds. Since the rigors of the theoretical static situation are not transposable in terms of this historic *processus*, it will surely be necessary to admit imperfections and impurities into the picture; then, too, this system will remain informed only to a minimal degree; it will employ the consumer's elementary information concerning the use of his income and the producer's concerning the techniques of his production.

The existing economics of the twentieth century are by no means so simple. The relative growth of an industry depends on its capacity to increase its share of total industry sales by a politics of selling and by the exercise, independently of its capacity to innovate, of its monopoly powers in regard to its rivals, to those who provide it with materials, to its clients, and even to the public interest. New industries do not emerge from the mere union of technical progress with a dynamic entrepreneur but, frequently at least, through the co-operation of economic and financial groups and of governments.

The result is that the structure of production is not automatically controlled or controllable in practice by spontaneous movements of the market and buyer preferences. The general interest is no longer conceivable as a result of mechanisms outside of and superior to the conscious decisions of alliances and coalitions of economic agents. These alliances and coalitions among owners of the means of production, among organized workers, among professional interests, among political aspirants, defend the structures of production which they consider desirable; they attempt to put them into operation by means quiet different from the best cost and the best price proposed to a consumer who knows what he wants. They make every effort to have the game played according to

rules most favorable to them, to obtain the benefit of the broadest possible credit, the rate of exchange which will serve them best, and the most opportune and durable subsidy. This struggle for a production structure most in line with the wishes of these alliances and coalitions of interest can be neither judged nor arbitrated by the expressed opinion of the consumer. It should be done by the voter. It could be done by his representatives, or, at any rate, by the most competent and capable of his representatives. For this an information "of general interest" is required, demystified through real struggles; the emergence of such an information will be facilitated by relatively independent elites and scientifically verified economic knowledge.

3. *Changes in the Mechanisms of Distribution*

Changes in the mechanisms of distribution in the twentieth century impose similar requirements. This may be demonstrated by showing that none of those changes registered over long periods (without, to be sure, being imprudently assimilated in the historic laws of development) indicates in and of itself that the economy is becoming progressive. In addition, none of these changes, which might be vaguely and superficially explained by pressure of social groups, can be understood through a thought process which militates in favor of progress, except in terms of the basic functions which must be fulfilled in any type of organization, if regression is to be avoided.

A mass of facts of decisive consequence will clarify these propositions. The first is a decreasing inequality in the distribution of personal income, observed over long periods in highly evolved economies and measured notably by a comparison of the form of Lorenz's curve over successive intervals. When it occurs, this decreased inequality is not, in itself, a sign of a progressive economy; at most it might be considered a preparation for progress. Under capitalism, inequality fulfils three functions concerning which I make no judgment here but of which I accept the incontestable reality. Inequality is a basis for the accumulation of capital; the highest income classes are the ones which save; if they are eliminated, another type of accumulation must be organized, through, for example, more or less forced savings and taxation.

Inequality of income has a role to play in the stimulation to productive effort; if it is reduced, it must be replaced with statutory inequality, inequality in social prestige, or inequality in the practical means of labor exerting some of the influences that used to arrive at inequality of income.

Purely as a matter of fact, let it be added that inequality of income and inheritance is one of the elements constituting social power and social cohesion; if it is destroyed, other forms of social power must be built in its place, and new bases must be given to social cohesion. From these various points of view, the most effective and the most continually propagated innovation is not automatically realized through decreased inequality. In a given type of organization there exists an optimum inequality—an inequality which, taking historical conditions into account, best fulfils its three functions. The transition from one type of organization to another is full of risks and confusions; social struggles make it possible practically for them to be approached otherwise than under the influence of the ideologies and information divulged by the dominant classes; but this is only the beginning of a demystified information capable of understanding irreplaceable economic functions and, through education and persuasion, of making both intelligible and acceptable the conditions under which these functions can be performed.

Let us now consider those characteristics of wages in twentieth-century economies that are indicated in speaking of salary as a dominant form of income. I assume responsibility for this terminology and for this analysis. I hope I will not be held responsible for propositions that I have never formed and that I do not wish to assume. I have here in view only two incontestable facts.

In highly advanced capitalisms (1) the real wage rate is defended by organized labor, which employs in its struggle numerous procedures foreign to the competitive market, and (2) full employment is defended for its own sake—a high level of employment is sought by the unions and, recently, with the official acquiescence of governments. As a result, the total flow of wages (the number of employed workers multiplied by the effective rate of wages paid to the worker) tends to be very much more difficult to change than it was during the nineteenth century, up to the time of World War I. Another result is that economies tend in fact to achieve their developmental adaptations otherwise than through the lowering of the total flow of wages.

This situation prepares the way for a progressive economy but does not create it automatically, nor does it guarantee its establishment. For the working class itself, what matters in the final analysis is full employment compatible with full innovation, with the most active and most rapidly propagated effective innovation. The fixing of economic resources in a predetermined employment structure, rigidity of relative wage scales

without any regard to productivity, structural inflations resulting from the rigidities and inflexibilities present in all segments of the economy, a flagging in the disposition to create and to work resulting from a blind application of the slogan of full employment, and a one-sided politics of wages—all these are marks of an economy afflicted with evils which threaten it with regression insofar as it has neither understood nor maintained the objective conditions on which its continued functioning is based.

Let us consider, finally, how profit has become a threatened form of income in the economies of the twentieth century. Nothing of importance can be said on this subject until four present conditions of the permanent problem of profit have been explicitly formulated.

Profit from long-term decisive actions of a modern economy, that is, from major innovations, is a result of the creative power of private and public bodies. Eventually, I shall refer the skeptic to the way in which exploitation of the newest and most revolutionary sources of energy is being undertaken and to the action exerted by regionalist politics on the amount and rate of profits in a nation and its provinces. The division of a realized or anticipated profit between the government treasury and business is thus often established not between a government providing “generous” public services and a private innovator but between two co-operating innovators.

To consider private firms alone, the profit from monopoly and that from innovation are in many cases indissolubly linked one to the other and in a very exact sense, because such elements of monopoly as the difficulty of getting started in industry help consolidate profits and make them continue, enterprises or coalitions of enterprises can budget large sums for research in the hope of invention and innovation.

On the other hand, in certain well-defined cases, as when a large firm enjoying a partial monopoly imposes its prices on smaller firms but at the same time enlightens and sustains them, or when a leading firm is followed by firms under its influence and helps them to innovate, it is indispensable to distinguish the autonomous profits of the large from the resulting profits of the small; the propagation of innovation among unequal firms in industry does not necessarily mean a disservice to effective innovation; induced profits which benefit the “little” firm do not, in an individualist logic of the firm, belong to it.

Let us add that, in all cases in which joint productions (creation of new industries, large-scale rehabilitations of existing industries) are undertaken by economic and financial groups, it is systems of interlinked

profits which determine investment and establish the rhythms of exploitation of natural resources as well as the politics of sales and reserves. These group procedures among commercial banks, industries, and exporters, for example, are neglected and misunderstood in profit theories, which are impotent to clarify action and to guide it correctly.

It is puerile to confuse these changes in the data of the profit problem with signs of a progressive economy or to explain them economically by almost uncompromising reference to the pressure of social groups.

In monopoly capitalism (or in any system whatsoever) profit exercises economic function. It provides remuneration for the joint services of creation and authority; the chief of the producing unit, whether it is simple or complex, must at the same time bring about effective innovation and reconcile the various providers of services—technicians, workers, investors. Creative capacities are rare, and so is the capacity for authority; to find both capacities in a single person is extremely rare. The remuneration for these two allied capacities is, consequently, in any type of organization, high compared to that given for active performance of work; in addition, the form of this remuneration is inadequate unless it suits the type of man to whom it is offered. It is difficult to conceive, under capitalism or under socialism, that the agent who successfully accepts and copes with the double challenge of economic creation and economic authority gives to his fullest if he receives an income or a salary determined administratively.

Profit, in every economy which remains decentralized, is nourished by the accumulations and the uses of capital directly attached to the development of the unit of production; they are dependent upon the unit's individual fate and prepare its individual success in the future. These accumulations and these particular uses contradict the logic of the general and anonymous attribution of capital by a perfect financial market or by a perfect central investment and credit body. Insofar as they exist, they reintroduce tensions which may be economically fruitful between producing units whose needs in additional capital would be ill served by the concrete existing financial market or central investing body.

Monopoly capitalism supervised by public programs shows, in the midst of extreme confusion, some signs of a profit functionally discussed. The share of profits in monopoly and in power remains considerable. However, several circumstances are causing profit to be formed quite differently than was the case in the second half of the nineteenth century.

Public accounting assures the public services a less imperfect knowledge

of the profits of individual and grouped companies. In meetings held to prepare programs or plans of investment, industrialists in contact with the representatives of the “general interest” and sometimes with those of organized labor disclose their intentions concerning expansion and modernization of their business. The public bodies who control treasury policies, credit, and admitted or hidden subsidies are in a position to exercise an action on the amount of realized and distributed profits and on the rate of profit based on capital or sales.

I wish to emphasize that I form no value judgment on this stage of affairs; I make no prediction about its future development. Far from rules and prophecy, I simply state the reality, in important and not at all ambiguous cases, of a profit whose amount and rate depend partly on economic discussion—whose amount and rate are the results of conscious and considered imputations operating in a broader framework than that of the individual firm or even of a whole industry.

This profit is no longer an ephemeral residue on the non-informed market of pure competition. It is no longer a residue on markets of differentiated competition and oligopolies where information struggles are added to price struggles. It is very obviously not the economically opaque and unintelligible residue formed by the pressure of social groups. The interested parties themselves well know what is apparently forgotten by some analysts full of good will—that in present-day rationalized social struggles, in order to resist or attack, to organize a defense or launch an offensive, what is needed is not the exercise or invocation of naked power but rather a demonstration that one is performing a useful function in the economy.

Economic discussions of profit are carried on in terms of its irreducible functions. Profit does not necessarily tend toward the form of institutional income or salary; the conditions of its formation and use are beginning to be withdrawn from the mechanisms of economic and social competitions; they are becoming dependent upon a dialogue more evident and more intelligible between representatives of economic agents (including governments) co-operating in the collective work of economic creation.

V. THE DIRECTION OF ECONOMIC ACTIVITY

Western economies of the twentieth century no longer obey only the logic of the market economy but also that of the human economy.

The market economy proposes maximum profits, the maximum gain resulting from trade with a view toward enriching particular groups and

individuals. Acquiring and holding wealth, these groups and individuals desire and accomplish their own expansion.

The human economy proposes satisfying the basic needs of all, the maximum freedom concretely lived by each human being, with a view toward opening up⁶ all of man's potentialities in each individual.

The logic of the human economy is strong and conquering, compared to that of the market economy. It is seen in the distinction currently being made between economic and social progress; this distinction is repeated in its reassuring banality at the level of superficial and sheltered inquiry, since it would become dangerous and even revolutionary if it were carefully examined. In fact, when economic progresses operate at man's expense, through the destruction and deterioration of human beings, the dominant classes aspire to social progresses as a revenge against the way the system functions, accepting discussion and compromise in order to avoid irreparable ruptures. The progresses called "social" compensate—slightly—for the hidden losses, the tacitly accepted waste in human energies thanks to which society can show high productivity expressed in terms of things, inert objects. When, on the other hand, the human heritage is safeguarded, increased, improved by the very action of the institutions which direct production and trade, economic progresses tend to embody social progresses. In an economy which would continually reduce tensions in the struggle for the acquisition and enjoyment by everyone of all the means of human life, no economic progress would be qualified unless it were also a social progress; no progress which lessened the broadening opportunities of human beings would deserve to be called "economic"; conversely, no progress would be called "social" unless it gave each being the means of achieving human status in his life.

The progresses specified by the names cited above disclose contradictions between the acquisition of wealth and social needs. Economic progresses in the fullest sense would, on the contrary, mark the stages of a progress toward economy without scarcity and toward society without constraint.

These two myths do honor to the thought and the action of the West. Our historic experience has been and remains such that these myths are accepted by lucid, reflective, and honest minds merely on condition that they measure up to their historical truth in an action tested and a knowledge verified through social struggles.

6. E. Minkowski, "Expansion et épanouissement, Uit," *Tijdschrift voor Philosophie*, Vol. IV (December, 1956).

Enterprise, the market, commercial trade, and private ownership of the means of production have long been considered as the main institutions of an order at once unique and necessary. The stylization and magnification of an epoch in abstract diagrams have in no way slowed the course of history; we have had to see clearly that human expression not only calls for specific means but also wins its rights against the theoretical logic and concrete strategies which supposedly enjoyed a privileged position. The reduction of unemployment, the protection of health and leisure, the diffusion of public instruction and political rights, social insurance, social security—all the gains of the progressive economy have been claimed, despite “expert” opinions declaring them impossible, and seized from classes which had intended to sacrifice no chance of aggrandizement. These gains did not follow but rather shattered the varied logic of profit and individual gain, of the market which pretended to be neutral and separate from political organization, or private ownership of the means of production supposedly conceivable without reference to the social disciplining of power.

Social struggles and the less narrow and partisan knowledge which came out of them have forced an acceptance of the plurality of views—the diversity and opposition of meanings attributed to a single institution determined by the position of the observer watching it and the combatant transforming it. This gain, truly in the social dialogue, has been accompanied by a slow (and continued) demystification of universalist ideologies, placed at the effective service of class and national particularisms.

Western ideologies are all universalist in principle. Frenzied nationalisms, wild-eyed individualism, and fanatic imperialism are never content with themselves and have not sought their own justification in their immediate and obvious actions. They stated their rights in the name of a society which would finally be reconciled, of a regime of abundance and liberty to be finally achieved through the very introduction of abundance and liberty. Each individual, each particular group, being well served, the total of humanity would finally be well served. Through what harmonious law? After how long a time? No one could venture an answer without the risk of deception.

Having come of age in and through our struggles, we today place our trust in the conscious effort of societies which are undertaking to become reconciled in themselves and with others. We no longer have faith in a harmonization operating above and outside ourselves. We accept the painful teaching that comes from real conflicts. These prevent us from

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confusing the peace of a few with the slow, painful conflict of all. They help us unlearn the liberty proclaimed and conceived by the smaller number and incline us toward a preference for the patient and effective liberation of the multitude.

To be sure, our collective memory still functions quite badly, but it does preserve us from many illusions and makes us suspicious of generosities which change nothing in the material arrangement of the world. Our power of collective anticipation remains mediocre; however, the long periods required for concrete projects imposed on us by contemporary technique, the sense of a task and a destiny for the human species beyond the ephemeral accomplishments of nations and empires, are fabricating for us a time whose dimensions are not the same as that of our predecessors; they felt and thought as broadly and as far as we, but their knowledge and power were incomparably less than ours. Humanity has become informed about itself, through its struggles and through the precarious conquest of relative, demonstrable, and expanded truths. It has become more capable of both memory and future.

Will it discover a minimum moral science communicable to all? This is the question asked by men of science, led, in their paths and by their methods, to the idea of a perfecting of the species. The hope of this perfectibility, judging and condemning the destruction of life and the annihilation of the material obstacles to the advancement of the mind, constitutes the sole step in which the contradictions inherent in economic progresses would no longer appear to lead to a dead end.

Our societies have advanced economically, by trial and error, at the price of immense wastes of resources, exercising harsh constraints, practicing a distribution of the burdens and the fruits of progress which is neither inspired by strictly constructed models nor checked by exact and sincere accounting. Economic progresses are encumbered by contradictions and acts of ignorance which in themselves would merit very careful studies.

It is when a procedure or a piece of machinery is producing its best yield that it is supplanted and retired. Special progresses, sometimes complementary, are also often opposed to each other. The individuals and groups which launch and pay the costs of a first development are shunted aside by the workers of the twelfth hour who draw the full benefit of earlier efforts. Savers and innovators lose—or their descendants lose—the fruits of saving and innovation. The acceleration of technical progress brings with it fecundity but also incoherence. To finish a job quickly and

to elude the irritating difficulties involved in the critical speed of progresses, we provisionally advocate the most rapid spread of innovation. Each person wishes to shorten the delays which separate invention and laboratory tests from widespread industrial use, but no one can yet measure scientifically the best rhythms of propagation.

Will skeptical doubt result from these contradictions and these forms of ignorance? Or will it be lassitude?

At this point it must be realized that the meaning of economic relations is becoming universalized in pure fact. Each being, each group, capable of observation and reflection knows that real transformations in institutions are beginning to transform the being or group into artisans of a truly collective work. He knows too that the egotist, the greedy person "turned in unto himself, is but a man in a state of arrested development . . . infantile in instincts, a sort of sub-man" (Jean Rostand). He knows, finally, that the struggles and real co-operative efforts of living men cause them little by little to know the factors of determinism involving them, that they then begin to surpass these factors, and that they earn a common freedom through a criticism and a combat begun anew each day.

This is sufficient for the contradictions of progresses, without being resolved, to be surmounted. The least distracted and the most conscious conceive themselves, not without reason, to be co-operators; they do not live in the haunting fear of being dupes. They create; they labor at a task which escapes the calculations of individuals, the trickery inherent in all societies of men, and the errors of all their calculations.