OUTLINE OF A THEORY OF CHANGE IN HUMAN COOPERATION

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The main weakness of existing theories of organization is, in my opinion, their static character, their almost total lack of historical perspective. Their very name, »theories of organization«, is the symbolic and concentrated expression of this restriction of the time-horizon. Organization, with its characteristic hierarchic arrangement of work roles, its subordination and superordination, leadership and obedience, — has indeed become ubiquitous in the wake of the first industrial revolution in both capitalistic and etatistic systems. Socialism as a world movement, however, points to different possibilities for people to work together. In this way interest was aroused to look upon human cooperation as a historical process.

For a process to be meaningful it must make sense when studied in detail. All the pertinent questions must have answers both at the level of historical epochs and in the changes experienced by the individual cooperative undertaking.

What is the character of change in human cooperation? Is there opposition or complementarity or both between the divisive and the uniting forces in its changing forms? What is the meaning of complexity?

It might be possible to reduce the variety of cooperative behavior to a relatively limited number of fundamental forms. All efforts toward that end are exciting even if they result only in reclassifying what is known and cannot yet lead us to the unknown.

a) Differentiation

The concept of the division of labor seems to be the nearest approach to a paradigm we have yet achieved in the social sciences. Experienced with increasing frequency in the everyday life of urban industrial society, it has been projected backwards into history, investigated in simple forms of society followed in detail through modern

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work processes, analyzed as technique and as social relation. Its implications having been traced in a dozen fields and disciplines, the division of labor has become a common denominator of the most diverse theories, from the physiology of work to the separation of powers, and the starting point for world views and utopias from Mandeville to Aldous Huxley.

No discussion of human cooperation can avoid division of labor, indeed, division and cooperation are symbiotic. In another classical text on the subject, Karl Bucher distinguishes those forms of division of labor that have actually developed through the union of formerly independent individual work processes — such as the combination of work and the work association together with its three subcategories: cumulation, serialization, and linking of work operations — from that have come into being through partitioning what was originally one piece of work: the decomposition of work, the division of production, the transfer of work.

Be it the oft-belabored example of the stone too heavy for one man to lift, or tasks that conflict with the natural rhythm of effort and relaxation, wakefulness and sleep in the individual, like around-the-clock watch or sentry duty, people cooperate because they have to divide the work among themselves in order to be able to tackle the task at all; they divide it as they cooperate and cooperate through dividing. But what is, in effect, being divided? Is it the task as a purpose and responsibility? Or work operations to be performed in the furtherance of the task? Out of this alternative, which in simple cases looks like quibbling, developed the fundamental difference between division of labor understood as the intentional restriction of the field of activity and division of labor interpreted as *the breaking up of an integral work process* in order to allocate the parts as individual tasks to separate work roles. The first is the root of the social division of labor, with hardly measurable consequences for the structure of societies. The second was the basis on which were built the industrial enterprise and cooperative relations in machine work, which dominate the scene of industrial societies and monopolize the attention of their analysts.

There are obvious differences among categories of people, such as sex or age, as well as irregularities in strength and capacity for a given occupation, which may well determine why some tasks are assigned to some people rather than to others, more frequently than to others, or from which certain natural classes are necessarily excluded. Then, too, there are complexities in work processes, a need for continuity, differences in skill requirements that are equally natural reasons for partitioning these processes and assigning the parts to several performers. In both cases we have the dilemma of *dependence* vs *independence* in two socially most significant forms, as I shall try to show.

Specialization in society has been both correlated with and to some extent causally related to an increase in wealth and to urban living referred to as civilization. Civilization has made people increasin-

gly independent of nature; at the same time they have grown more dependent on each other.

The almost exactly opposite evaluation of the loss of individual independence through an increased division of labor, inherent in urban society, was made by ideologists of agrarian and peasant movements from Tolstoy to Gandhi. By depriving man of wholeness in relation to his work, the urban-industrial way of life prepared his economic exploitation and social enslavement. More than that, through the pettiness of specialization, it destroyed the completeness of a well-rounded personality.

In its other form as well, that of the splitting of work processes, division of labor can be viewed mainly as the greater independence of a society through increasing productivity and affluence, or mainly as the greater dependence of the individual because of the partial, unfinished character of his work contribution. The classical writers we reviewed earlier tended to lean more toward one or the other of these emphases, though each was able to see both aspects.

Division of labor is thus a concept coming apart at its seams. While it is able to contain the opposites of partition and cooperation — indeed needs both of them to remain meaningful and relevant to reality — the disparity between the aportioning of fields of interest and the splitting of work processes somehow fails to reach synthesis. The two lead into utterly different complexes of problems: one to social structure, the other to organization of work. This discrepancy is magnified and made practically irremediable in the discussion of implications for dependence and independence, where the span of concern stretches from time-and-motion studies to ideological utopias.

Still, the division of labor — in either or both senses — is a fundamental fact of social life as well as of cooperation in particular. To make it more amenable to orderly treatment I propose to define it both in a more general and a more specific way, as differentation.

Differentiation in cooperative systems will mean the replacement of any one element of the system by two or more elements.

This determination is more general because it does not limit the process of division to work or labor, however widely understood. And it is more specific because it considers the transformation only within cooperative systems, as defined above, leaving aside its implications for society at large.

When Adam Smith thinks of pin production, what is divided are the activities necessary to make a pin. When he writes of exchange and barter, however, it is another kind of division he has in view: the proliferation of needs and interests that constitute the demand for goods on the market and the motivation for greater productivity. Marx distinguishes the division of work demanded by technology, and the separation of management functions from actual operations in the interest of the capitalist. Weber sees the relation among hierarchically arranged official roles as the essence of the bureaucratic division of work. And Friedmann deplores the fact that technology has reduced the individual work role to a meaningless fragment.

The elements of a cooperative system differentiate along the dimensions of purpose, relation, activity. Along the dimension of purpose we have sub-purposes and instrumental purposes, central and peripheral, avowed and covert, official and displaced interests. Along the relation dimension we have roles, role components, relevant attributes and qualities, units and patterns of relations with wider or contiguous systems. Along the activity dimension we have operations, elements of operations, and information on which operations are predicated, from fundamental scientific insights to detailed data about the practical situation that triggers the activity or is going to be affected by it.

Why do cooperative systems differentiate? There is increasing convergence in contemporary opinion that differentiation in cooperative systems — industrial as well as political, in developing countries no less than in those already industrialized — is related to the interaction between the system and its environment.

In relation to developing countries the link between differentiation of cooperative systems and their evolving environment is almost axiomatic.

There is, indeed, prima facie plausibility of the assumption that cooperative systems differentiate in response to impulses, requirements, inputs confronting them in the environment. In this context »environment« is to be understood as whatever is not the system. Thus, e.g., the people who cooperate are members of the system when considered in their respective roles, but they are also the environment of the system as whole personalities with other roles, with ideas, wishes, feelings, and interests beyond their system role.

The world contains potentially unlimited variety, to which people respond, among other ways, by work — specifically by cooperative work, with division of labor differentiating to match the environmental variety they are confronted with. Differentation makes their work more efficient and so more productive. Greater productivity means better chances of interest satisfaction. Satisfied interests are pushed into the background, their satisfaction is accepted as a matter of course, and new interests and aspirations become motivationally active. Some of these new interests are directed toward the cooperative system itself, adding new purposes, proliferating new relations, inventing new activities or new methods to perform the old ones. The expansion of interest horizons opens new fields to the system's functioning, and an increasing portion of the world's potential variety becomes environment whose diversity is immediately relevant to the system. The factory marketing a new product, the school teaching a new subject, the government providing a new service — all have to take into account raw materials, customers, information, students, specialists, interest groups, forms of knowledge that had no immediate revelancy to them before the new developments. At the same time, internally, there are more contacts, new tasks of supervision, horizontally and vertically, increased spans, new career possibilities, and with them new career ambitions, new competition and possibly new conflicts. Internally as well as

externally, the situation develops new complexities and requires still more differentiation in order adequately to cope with them.

The whole process can be visualized as the cooperative system interacting with its environment, which is a potentially inexhaustible source of variety. As the system differentiates in order to increase its capability to cope with environmental variety, its activity makes more of the potential diversity of the world actually relevant to itself. In this way, by its own differentiation, it contributes to changes in the environment that require further differentiation of the system.

The assumption of a constant impulse toward differentiation implies the necessary acceleration of the process. If the probability of any element of the system to differentiate, i.e., to be replaced by two or more elements, can be taken as constant, then the probability that there will be differentation somewhere in the system increases with the number of elements, the number, in turn, growing with differentiation.

In spite of its plasticity and its persuasiveness, the model of constant differentiation to reach requisite variety, when applied to cooperative systems, raises serious difficulties. One type of difficulty is generated by the vagueness of the concept of environment. It is not the whole world that is the environment of the cooperative system in the sense of being influenced by it or exercising influence upon it. We are talking about the relevant environment and its expansion as a consequence of the system's differentiation. Relevance, however, is not an either-or attribute. There are more or less relevant portions of the environment, just as there is more or less susceptibility of this or that part of the system to be influenced by one or the other segment of the environment. Cooperative systems can pursue a conscious policy of reducing environmental influences upon those of their elements they wish to keep stable. »Under norms of rationality — writes J. D. Thompson — organizations seek to seal off their core technologies from environmetal influences« (Thompson, 1967, p. 19). Core activities and boundary activities are generally distinguished in cooperative systems. The second class is specialized for transactions with the environment.

Neither should the world be regarded as a passively reacting aggregate triggered into feedback activity by the system. The world includes other purposefully active systems and is, in general, a field of surprises where almost anything can happen, and situations of essential importance to the individual cooperative system can develop without any contribution from that system and without any possibility for it to influence appreciably what is happening.

Also, the influences of the environment upon the system, as well as the system's reactions, cover a wide span of differences. What comes from environment ranges from indispensable inputs to fatal disturbances. The system's differentiation may increase its capability to procure the necessary manpower, raw material, instruments, information, but it may also expand its needs. There are few known facts on which to base a general judgment as to which of these two tendencies will tend to overtake the other and under what circumstances. Coope-

rative systems are not immune to revolutions of rising expectations. As to the reaction to disturbances, the cooperative system may choose from a range of possibilities. A government, for instance, may try to isolate itself from disturbances or to avoid them through reorientation — e.g., through migration of whole populations — in some cases, rearrangement of goals and priorities in others. It may attack the source of possible disturbance: keep the passengers of ships in quarantine, prohibit and destroy subversive literature. monopolize foreign commerce. Or it may try to neutralize potential disturbance by complementary filtering or deflecting activity: introduce compulsory inoculation, institute free and obligatory education, establish tariffs and export premiums. Some of these measures do correlate with differentiation of the cooperative system of government, but others do not. In general, »homeostatic« attitudes, i.e., controlling the inputs, will require less differentiation than »cybernetic« attempts to adapt the outputs of the system to their observed effects (Luhmann, 1971, p. 125).

The problem is even wider than that. Does the assumption of a continuously expanding relevant environment hold for all cooperative systems? It could be maintained that the effect of a progressively more detailed division of labor is exactly the opposite. A football club does not usually overlap with a group for ikebana flower arrangements, nor does an association for the UN with the community chest. The government of Burma will seldom have to discuss its relations with the government of Paraguay, or the banana company contact a whaling enterprise. As a larger number of cooperative systems partition the world into smaller specialized fields, we might speak of a general increase in organization density, or greater mutual interdependence in society — in whatever sense of that ubiquitous term. But from the point of view of the single specializing system, there is a picture of shrinking fields, more restricted publics, smaller shares of the market, pre-selectioned pools of specialized manpower: therefore, of less relevant variety, not more.

This leads to the second difficulty, more obvious than the first and also much shorter in its presentation. Even a superficial acquaintance with the life of cooperative systems demonstrates that there are organizations that do not differentiate, but stay put — factories working with the same machines, hospitals with the same staff, associations with the same membership, governments within the same territorial boundaries. There is an unmistakable aspect of stability in the life of cooperative systems. And there are also instances, though less general, when the process of change in cooperative systems is the opposite of differentiation. Organizations discontinue some of their activities, cut personnel, close down branch offices.

The image of incessant differentiation induced by infinite environmental diversity is not sufficient of itself to account for the specific ambimodal life cycles of cooperative systems.

b) Integration

The concept of system itself implies opposition between diversity and unity. The classical positions on cooperation, outlined in the beginning of this chapter, took account of both sides of the opposition. While Adam Smith was concerned primarily with the linking of many cooperative systems through the market, into the economy, Marx spoke of the integration of the individual enterprise under the management of a capitalist-entrepreneur. With Weber the emphasis shifted completely to unity through hierarchy and discipline, while for Friedmann unity enforced by the conveyor belt becomes the central problem, nearly an obsession.

The making up or composition of a whole by adding together or combining the separate parts or elements — which is the meaning of integration — expresses the emergence and existence of the system's links in somewhat technomorphic fashion. Therefore, it is this presumed action of »making up« that constitutes the main problem in maintaining the concept of system for rather weakly connected sets of phenomena like cultural or social systems. Are the various manifestations tied together by a network of norms, by higher frequency of communication, or by functional interdependencies? Some »fitting together of a social system to constitute a whole« (Angell, 1968, p. 380) seems still to be needed. By whom, for whom, and through what methods? — are the questions called forth by this kind of imagery.

There are no such problems in the case of cooperative systems. Here the whole process od integration is salient and usually visible as to its initiators, methods, and beneficiaries. Cooperative work has to be held together somehow — even if that is done in rudimentary forms of cooperation, only by its boundaries in time and space, its participants seeing and hearing each other, its rhythm being controlled by songs or recitation (Bucher, 1902). There may be a lot of controversy about who or what or how, but as a rule no effort of analysis or imagination is needed to see and accept that cooperative system are man-made products.

But the modes of integration must be considered together with differentiation. The interplay between the two — integration and differentiation — seems a more promising way toward the explanation of change in cooperation than either side of the opposition taken alone.

Integration is conspicuous in cooperative systems, and is better defined in them than in either society or culture. Several points, however, have to be made at the outset about integration in cooperative systems, suggested by the wider and vaguer use of the term »integration« in relation to society as a whole. First, the ambivalence in the concept of integration, implying both enabling order and limiting constraint. Second, the wider concept directs our attention to instruments, tools needed to forge the necessary links. And third, it familiarizes us with the idea of degrees of integration, of systems being more or less integrated, better or more sloppily ordered, severely or more tolerantly constrained.

At the most general level, integration is selection: excluding an indefinite number of possible alternatives by deciding for some. The establishment of a list of priorities, the determination of a criterion of membership, the proclamation of a policy of service allocation, the choice of technology for the manufacture of a product not only commits an organization — it makes it. It introduces order into purposes, structure into relations, method into activities. Without it, prior to it, no meaningful cooperation is possible or is thought possible at a given point in time. But commitments, once made, prohibit alternatives. They narrow the span of subsequent choice, reduce the amount of free resources; and recommitting is more difficult than the original allocation, however elastic the arrangements.

Order and constraint are two names for one and the same effect. The one has a positive emphasis, implying order cooperation; the other has a negative connotation and a constraint depriving us of possibilities. The opposite conditions, uncertainty and freedom, have the same ambiguity. In the sixties, the concept of uncertainty became so fashionable that it began to be used, as suggestive connotation, without clear awareness of its valuationally double character. Uncertainty as the opposite of information, as psychological insecurity, as institutional unforeseeability, connotes conditions that are in some sense unsatisfactory, that by semantic appeal alone call for a remedy. In the same way, to control somebody's sources of uncertainty in a cooperative system means to have power over him, to reduce him to dependence. Hence the need for security was promoted to the rank of a primary motive. However, the assumed motivational effect may work in the opposite direction as well. First, sometimes it is good not to be burdened with information that would overtax our capacity to deal with it anyway. Second, an organization not too firmly committed to any one purpose or course of action is open te new purposes, free to choose from a large number of possible actities. Third, the transfer of the stress of responsibility to take decisions in a difficult situation may be the main reason for the creation of a cooprative system. Finally, the need for security, complementary but also opposite to it, is the need for new experience, for expansion, growth, adventure, even for »beckoning danger« (Rilke) which is the challenge of life.

The dialectics of order and constraint, uncertainty and freedom are operative at every level of the integrative process in cooperative systems. It is not true to say that the system represents order which is confronted by uncertainty in the environment (Thompson, 1967, p. 10). It makes as much sense to see the environment as constraint against which the system strives to maintain its freedom of decision and action. A market environment, for instance, can be seen as relatively random, restricting the freedom of the individual enterprise only by the operation of general »law«. As its randomness dimnishes, as it becomes grouped and, moreover, reactive, its constraining effect upon the individual firm increases. When, again, the randomness of the environment exceeds an upper limit and a process of generalized social change produces turbulence, the enterprise is swept along into a stream of uncertainty that now triggers a search for stability in internal inte-

gration and isolation from the environment (Emery and Trist, 1965). At the level of indvidual motivation, uncertainty can be as much a reason for adhering to strict and formal integration methods as for abolishing existing formalisms and integrative constraints. The employees of a bureaucratic organization may see in strict legality and procedural rules a safeguard against arbitrary supervisory intervention (Crozier, 1964). But professionals in a service agency will tend to oppose the same kind of forms and procedures as an unnecessary burden and restriction on their professional work.

Integration in one form or another is, indeed, an essential requirement in any cooperative system. By selecting from a pool of potentialities it determines what the system is at any one moment in its development. By this very action of choosing, however, integration means exclusion and limits the extent to which the system can differentiate. Any entities produced by the differentiating process of replacing one element of the system by two or more that do not meet the prevailing criteria of integration are unacceptable and are rejected by the system, which in this way aborts the differentiating move that produced them. Only a person who is hired becomes an employee of the organization; only a decision legitimated in the prescribed way is a decision of the agency; only a procedure conforming to established standard practice is recognized by the institution and does not incur sanctions. The old law maxim »Quod non est in actis non est in mundo« (What is not in the files does not exist) holds in a way for every cooperative system. Differentiation can be absorbed by a system only within the boundaries of its integration.

The tool-kit needed to integrate cooperative systems is what for the last hundred years or so has been called administration. It applies to the »administrative reduction of variance« (Child, 1973) in an individual enterprise as well as to public administration attempting to reduce variance in behavior throughout »political society«, assumed to be also a cooperative system of sorts. The point to be made here is that far from being coextensive with the methods of POSDCORB[1]), »administration« in this sense, will have to stretch its meaning beyond what we have been able to reconstruct historically or to foresee in the future if we want to identify it with human cooperation on the whole trajectory of its development.

We know too little of how cooperation integrates under high environmental pressure, which can be assumed as a chronic condition for past millenia of social development. Is integration achieved by solidarity, by a readiness for sharing responsibility and maintaining cooperation through common consent? Or is there rather a tendency to transfer the pressure onto a leader or leaders who are, in return, given privileges of one kind or another by the group? There is sufficient material to illustrate a whole gamut of solutions in primitive cultures. The question will have to be refined into: What kind of integrative behavior in cooperation will tend to prevail under what circumstances?

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[1]) Standing for Planning, Organizing, Staffing, Directing, Coordinating, Reporting, Budgeting (Gulick and Urwick, 1937, p. 13).

On the other end of the continuum, in situations that some think foreshadow forms of cooperation more general in the future, methods of integration are found that would strike a conventionally trained student or practitioner of administration as simply the absence or order. Streams of problems flow past opportunities for choice and past decision makers looking for solutions that exist but not necessarily where they are sought. Decisions are reached by flight from the problem or by oversight more often than by resolving the difficulties (Cohen, March, Olsen, 1972).

Let us consider briefly three key instruments for the integration of cooperative systems that by no means exhaust the concept of administration as it is currently understood, nor are exhausted by it: rules, planning, authority. And these only as examples, to show the width of the span and to illustrate the changing character of the tools. All three partake of the ambivalence of integration as integration is achieved through them.

aa) Rules

Understood as principles or maxims governing conduct, rules[2]) are almost identical with integration. They are regularity and rejection, link and limit at the same time. They are stability designed to meet change. In order to do so they must themselves change. And they do,

Rules differentiate to meet the contingencies of their application. But their capacity to do so is limited by their very character as rules. Requiring a certain kind of behavior they exclude alternatives, and it is in principle impossible to foresee, in the infinite diversity of the space-time environment, what alternatives can become relevant. From the outset, rules have the proverbial grain of salt built into them. In a situation of any complexity, literal application of rules is tantamount to sabotage, as the »strikes by eagerness« of public employees in many countries demonstrate. As the ceiling of elasticity of a rule is approached, there is, in an ascending order: interpretation, cheating, overt breaking or disregarding of rules. The moral evaluation of these behaviors depends on the specific social and normative contexts of each case.

Then, there is change. One rule is replaced by a different one, felt to be more in line with the requirements of the activity it is supposed to regulate. However difficult to imagine, hierarchy was once experienced as liberating, freedom from the previous arbitrary personal tyranny, a government of laws instead of men. The power of the hierarchical superior was restricted to the functional relationship between task-elements — at least this was what the rule said. The elements could proliferate almost without limit, new branches could be added to the organizational tree wherever and whenever it was felt necessary. Gone was the old limitation that a group at work could be no greater than the reach of the eye, the voice, as well as the heavy hand of the master,

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[2]) The Oxford English Dictionary lists 22 principal meanings of the noun »rule«. All have in them the elements of order and constraint. OED, Vol. VIII, pp. 881—883.

leader, headman, etc. And organizations did proliferate in an exponential curve until they began to approach the ceiling of the hierarchical rule's capacity to differentiate. Caught in the squeeze between the span of control and the length of the chain of command, with supervision crowding out basic operations, increasingly knowledgeable and trained specialists at the bottom resenting the obtuse formalism of the generalists at the top of the pyramid no less than the allocation of rewards, hierarchy began more to constrain than to orient. It is at this point that cheating the scalar rules becomes endemic. Proceeding from human relations to clique formation, the chain of command is camouflaged, bypassed, denied, jumped over, and evaded in many ways. Evading a rule presupposes that the rule is also recognized. When people start reaching decisions by »garbage-can« methods they are no longer cheating hierarchy. They are disregarding it, groping their way toward a new, more encompassing rule, a process that looks in its beginnings — as does every other fundamental pattern in human cooperation — like the absence of rule.

And then there are cycles beyond cycles. Changes, not of rules, but of ways to make rules, and how to make them stick. Traditionally, rules are categorical imperatives, norms requiring or forbidding under the pressure of more or less heavy emotional loads attached to them in the process of socialization through fear of force, hope of gain, charismatic fascination, or any available combination of the stick and the carrot.

After a time, however, a different kind of rule appears and spreads in organizations. This is the hypothetical imperative rooted in our cognitive representation of the world, the prescription based on what at any one moment appear to us as objective regularities independent of our purposes and fears, the technological blueprint translated into machine sequences. If you want to achieve A, you should do B; reward and punishment are implicit in the achievement or non-achievement of the purpose, they are not added to the action as a separate procedure of sanction. Circumventing this kind of rule might indeed be considered an improvement — pointing to its cognitive deficiency — possibly as a first step in the process of further invention and technological innovation. Cognitive rules and the technological prescriptions derived from them can be felt to be as much of a constraint as any normative injunction. An effort to refute the first may be every bit as much of a revolutionary act as is an attempt to abolish the second, but they are undertaken in a different emotional climate. Contests against what is felt to be nautre appeal to the sense of high adventure but seldom do they trigger intensive negative and antagonistic feelings as do confrontations among men.

Therefore, the shift of accent from normative to cognitive rules in the integration of cooperative systems — a shift implied in Weber's process of rationalization, in Duguit's transition to the State-of-public-services (Duguit, 1905), in the generally acknowledged Janus-face of government in the twentieth century, government-as-power and government-as-service, in the shift toward less hierarchical, less supervision-

dependent, more egalitarian forms of integration generally — is considered the most important long-term change in the ways people work together. The ambiguousness of the idea of rule should, however, make us cautious in asserting the long-term importance of this shift. Shift there is, no doubt about that. And the differences are real enough and visible enough. Still, rules also have common feautres. Whatever their character, they stabilize by constraining and enable by excluding. Almost from the moment they are formulated they must clash with differentiating and infinitely diverse reality. Their integrating effect is bought at a price, and almost from their birth there is under way a process to soften their rigidity, to adapt, to evade, to change them. Rules of technology no less than commands of authority are sometimes mainly honored in the breach — out of ignorance or spite, or in order to achieve greater justice or better knowledge. This is to say nothing of the question of a possibly deeper identity, whereby all rules, cognitive as well as normative, are attempts at survival before they are anything else.

bb) Planning

Planning in cooperative systems is a mediating process on the way from purpose to operation. It mediates by structuring the field of concrete decisions, by preselecting subpurposes, means, instruments and methods. It does not obviate the ongoing decisions nor does it preempt them. It merely channels future decision making.

To plan means, first, to translate the language of purpose into the language of task, to visualize, in however broad an outline, the path leading from A to B. This implies some kind of concrete picture both of B and of A. That is, not only of the task, the operations and their results assumed to embody the purpose but also the initial conditions, the starting point, the present situation to be worked upon and altered. The plan relates what is wanted to what is possible, objectives to available resources. It has to take into account preexisting constraints to action, rules fixing boundary conditions, other socially valued and protected purposes. It includes criteria of what is to be considered successful accomplishment defining the basis of subsequent control.

The basic problem of planning is one of measure. How far should the plan go? To what extent can the field of future decisions be usefully prestructured? No action can be totally planned without destroying its adaptiveness. And beyond a threshold of complexity, activity left completely to on-the-spot adjustments and orientation by feedback cannot be integrated at all. This dilemma between foresight and feedback, prestructuring and leaving open is characteristic of planning. It is also a paradigm for a number of standard procedures in administration, i.e., one of the forms of the integration of cooperative systems. Setting up organization structure, appointing personnel, devising budgets: all of these embody assumptions about causes and effects, about ends and means. All of them establish gradients for future decisions, although the decisions have still to be taken in the future. In this

sense, all of these measures are a kind of planning and have to be considered in the light of the duality of stability and change.

The essential conclusion is that uncertainty in cooperative systems is reduced gradually by a process of staged preselection. Integration is achieved at consecutively more concrete levels. At each level some boundaries are set up. Situations are defined, and these definitions are treated as matters of course on subsequent levels. Lines of communication are established, a ceiling is set to resources, decision-makers are designated. Within the terms of reference created in this way, the problems are gradually clarified, expectations become determined, questions are more unambiguously related to their answers. What is a mistake is now no longer a matter of opinion. Mistakes are readily identified. The process of correcting them, of sanctioning, has all been set in advance.

At each level there is a limit to the useful absorption of uncertainty as well. Some uncertainty, i.e., freedom, must always be left to the lower levels if their capacity to deal with diversity, to transform information, indeed their very usefuness in the system, is not to disappear. This means that criteria of consistency, correctness, mistakenness have to become more tentative as one moves up the levels of integration. In planning, inconsistent ends or interests can be handled by allowing for priorities to change over time or under certain condition. In situations of any complexity, consistency is not an absolute desideratum in planning.

There is also the question how far prestructuring should go in the direction of operations. The limit here is the transformation of operations into a routine, into standardized motions where individual cases that can in reality be only similar are treated as if they were identical. A lot can be, and has been, said for and against routinizing operations in cooperative systems (e.g., Friedmann, 1961, against; Luhmann, 1967, for). From what has been said above, it is necessary to conclude that the routinization of an activity to the extent where all freedom-uncertainty is drained from it already in prestructuring can be considered only a preparation for its transfer to machines. To use human capacity to control and utilize uncertainty in an activity where there is none is not a human use of human beings. It is not even an efficient use.

cc) Authority

Authority, in its time, has been made much of in cooperative systems — even to such lyrical outbursts as this by Bertrand de Jouvenel:

> The phenomenon called »authority« is at once more ancient and more fundamental than the phenomenon called »state«; the natural ascendancy of some men over others is the principle of all human organization and all human advances (de Jouvenel, 1957).

2 Ekonomska analiza 1—2

The fact that we tend nowadays to find this kind of verbiage not only reactionary but well-nigh ludicrous is in itself the most significant indicator of the change in the climate of cooperation reflected in semantic differentials. The semantics of »authority« indeed contains the whole span. Authority in its triple meaning — power to enforce obedience, power to inspire belief, power to influence action and opinion[3]) — expresses the modalities of integration as classified in many variants from Max Weber onwards.

It is usually assumed that the use of authority to integrate cooperative systems moves from the more coercive, harsh, ad hominem methods of imposing domination to more rational, utilitarian, contractual modes of obligating people to a purpose. But as noted earlier, integrative pressure can also be generated by the environment as well as by authority within the group. We have also to include authority through »inspiration of belief«, which is likely to break through the regularity of the rationalization process at any time, and represents the main element of surprise in the field. With these additions, the trend can be accepted as a simplified description of what happens to authority in cooperative systems over historical time. Like the prevalence of cognitive over normative rules, it is a symptom of the large overall shift in human orientation. And as with rules, the question is how irreversible is the trend, and how deep the difference. If, for instance, the coming up to some serious limitations in the environment should force societies to regulate human behavior in more fields and more strictly than was heretofore thought necessary, normative rules might make a comeback and so might coercive authority, if by coercion we mean an absolute limit to the freedom of behavior.

Another trend in the use of authority in cooperative systems is from individual to statistical compliance, from micro- to macroregulation. As Durkheim has pointed out, the simple societies wih their mechanic solidarity are characterized by criminal-law type rules: commands and injunctions addressed to individuals with sanctions aimed at the individual. By analogy, authority in organizations is, traditionally, a quality of individuals influencing other individuals to behave in a desired way. From the person, however, authority moves to the function, and then on to the program, the rule, the plan to expertise, to knowledge as such, no matter what its present source: a man, a book, a computer. Also, it is no longer considered necessary to bring each and every individual in a group to behave in an identical, preordained way. Most of the people doing most of the time what is broadly expected of them is usually quite sufficient for the system to perform. With more effective prestructuring involving impersonal kinds of authority, it is possible to leave more freedom to the participant at the level of his personal behavior, putting to better advantage his personal potential for orientation, decision, and selection among alternatives.

At the background of these trends is another fundamental feature of integration in cooperative systems. The use of authority, better than other example, demonstrates not only that integration has costs but

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[3]) The Oxford English Dictionary, Vol. I, p. 572.

the nautre of these costs. In producing authority, in stocking it in some sense, the cooperative system incurs costs, it makes an investment. The instruments of superior force to constrain members of the system, the appeal of ideas, the charm of personalities, the attraction of material gain, the blandishments of status and other non-material rewards, the persuasiveness of superior knowledge — all have their price. On the receiving end as well, the subordination of the individual to authority means a cost in terms of freedom lost, of potential precluded from use, and then also, possibly, in terms of opposition, of conflict, of ill-feeling and antagonism and of all their reprecussions.

Both these forms of cost, but particularly the cost of suppressing conflict, tend to grow more than proportionately with the size, complexity and information-dependence of the system. So that with development there is increasing pressure to find less costly uses of authority, less expensive forms of integration. This pressure alone — not even considering the social implications of greater productivity, the ideologies of democratic humanism, and other emerging forces in the same direction — would be sufficient to explain the trends in the image of authority. By shifting to less individual coercion and better prestructuring of the field where individuals are supposed to make decisions and to operate, a reduction of frictional costs per unit is achieved in the integration of cooperative systems, without which these systems would not be viable at all.

dd) Measure of Integration

Finally, integration of cooperative systems is an attribute that can be present in varying degrees. It should, therefore, be quantifiable and measurable. If we could also measure the different rates of change for separate variables, we might be able to predict the patterns of change for the whole system. At what rate is any given variable likely to differentiate? Where can integrative resistances to the differentiation process be expected to accumulate? At what points is the system most vulnerable to crises of input?

The examples of integration instruments just considered illustrate the possibilities as well as the difficulties of quantifying processes of change. Integrative mechanisms — such as rules — are themselves changing. They change by differentiation. And they change at differential rates. In the case of rules we have seen several degrees of »increasing elasticity«, overt change, change in the way rules are made and recognized, and finally change in what is considered a rule and on what dimension of human consciousness rules are predicated.

The inference seems plausible that all mechanisms of integration, of linking, elements, of cooperation into a sistems, of cooperation into a system, change more or less in the same way. But then the whole opposition between differentiation and integration loses its absolute character. What we have is a number of subsets in the system that change at unequal rates, the slower changing subsets acting as systemic links in relation to the faster differentiating subsets, and as boundaries to their differentiation. This creates a very com-

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plex situation and increases the difficulties in attempting a formal mo-
del of the process.

From the point of view of faster changing elements of a coope-
rative system, the question is the same, only inversely put. The amo-
unt of integration for them becomes the amout of limitation. What
is the range of variation allowed by slower changing elements? What
is the system's capability to absorb new elements created by diffe-
rentiation? What is the number of actually feasible recombinations
of elements? The answers to these questions determine the measure
of tolerance of integration; they indicate the limits to the possible
diversity of the system — limits that have to be measured separately
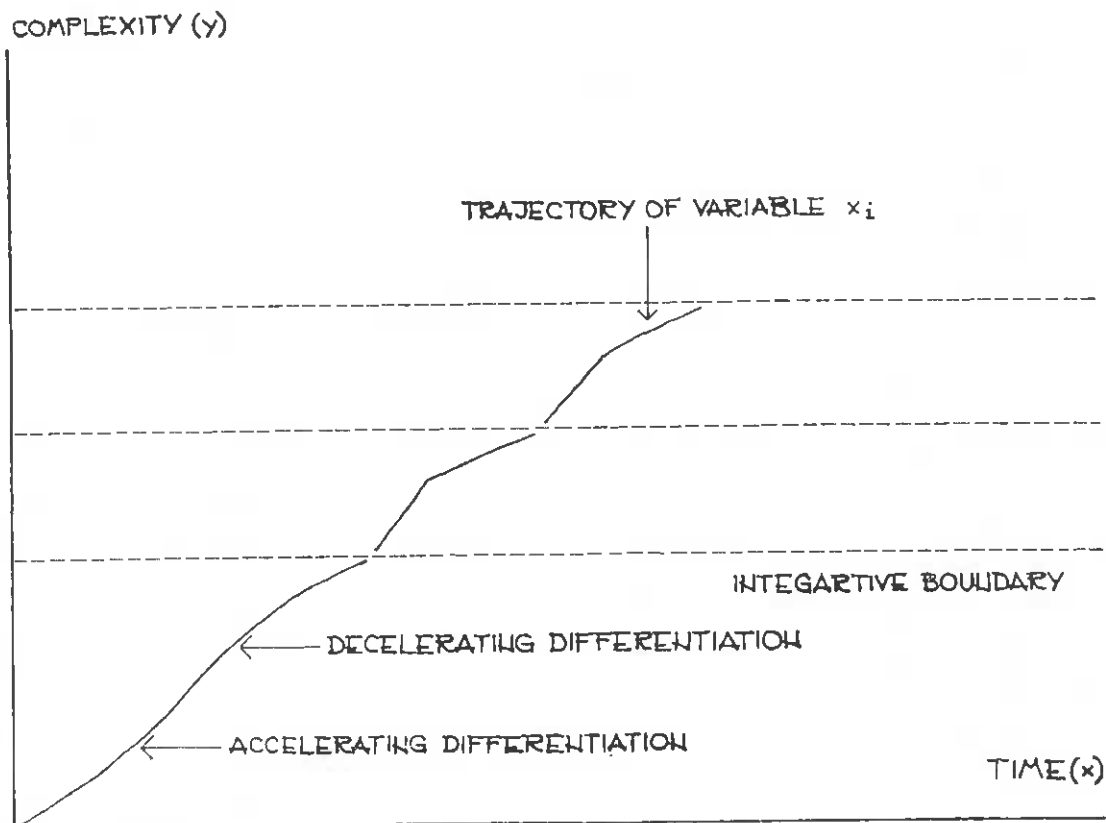at each level from slow changing to faster changing elements.

The concept of cost of integration, illustrated by the various
uses of authority, has possibly the most far-reaching, and least well
understood, implications for cooperative systems and their measu-
rement. Do the costs of integration rise or fall with complexity? The
need for more education, more elaborate coordination, more expensive
infrastructure, more ramified communication and many other incre-
asing outlays would speak for the assumption that complexity as
such has a cost. The example of authority, however, should again re-
commend caution. Less coerciveness and less micro-regulation should
by themselves reduce considerably the human costs of integration.

3. SUMMARY

From this discussion there emerges a model of the differentia-
tion-integration process in cooperative systems. Differentiation of any
variable — purposes, interests, plans, values, rules, structure, actors
— in roles, resources, methods, technologies, information — tends to-
ward accelerated progression under the impulse of expanding relevant
variety in the external and internal environments of the cooperative
system. The elements generated by differentiation of any variable are
integrated into the system by conforming to, meeting the criteria of,
being responsive to other systemic variables functioning as integrators
in relation to the first variable. The differentiation of the latter is
limited by the capacity of its integrator to accommodate variety. As
differentiation approaches these limits it is likely to decelerate. So
that the normal path of change for any variable in the system tends
to assume the shape of an S-curve, increasing in the first part of its
trajectory and decreasing in the second.

Each variable conforms, in principle, to the same pattern, only
at unequal rates. When some variables that function as integrators
in relation to others have changed through their own differentiation,
the other variables can now resume a new lap of accelerating and
then decelerating differentiation within their now more tolerant, less
constraining framework. Development of each variable, therefore, can
be seen as a series of S-curves through a consecutively widening field
defined by the changes in its integrator.

The complexity of the cooperative systems, i.e., the amount of integrated differentiation, has as many levels as there are variables with distinct rates of change. These interlocking processes must soon escape our capacity to follow them. Certain analyses nevertheless seem to hold at least for some middle-range of space and time. This suggests the hypothesis that not all variables of a cooperative system are equally important at every moment. Some process like dominance and recessivity might be expected. At one moment under given circumstances one variable, or one set of variables, may dominate the development

COMPLEXITY (y)

TRAJECTORY OF VARIABLE x_i

INTEGARTIVE BOUUDARY

DECELERATIUG DIFFEREUTIATIOU

ACCELERATIUG DIFFEREUTIATIOU

TIME (x)

of a cooperative system, while other variables are recessive in the sense of not exercising appreciable influence. Thus disregarding them under the *ceteris paribus* clause should not essentially vitiate prediction.

This, however, is an assumption that requires the separate examination of variables in more detail. As a step in this direction I propose to consider, the set of variables referring to purpose in cooperative systems. Purpose would include all motivational »configurations« active in the system, at the individual as well as the institutional level, ranging from overall goals, values, objectives, plans, programs, and policies, to interests of whatever group or individual member of, the system or relevant to it. The second set of variables is oriented toward relation: organization structure, job plans, sociometric networks, etc. The third encompasses activities actually performed, the ways things are done, methods, procedures, technologies.

We should not expect too much from this initial approach. But even traces of regularities, whatever sings of dominance and recessivity we might be able to discover, would encourage further inquiry in the same general direction.

(Rad primljen oktobra 1975.)

NACRT JEDNE TEORIJE RAZVOJA LJUDSKE KOOPERACIJE

Eugen PUSIĆ

Rezime

Umjesto jednostranosti teorije organizacije koja prećutno pretpostavlja da je jedini relevantni oblik zajedničkog rada ljudi organizacija, t.j. sistem hijerarhijski povezanih radnih uloga, pokušava se usporediti ravnopravno razne povijesne oblike kooperacije, od primarnih grupa neposredno koordiniranih audio-vizuelnim kontaktom, do timskih mreža, gdje male skupine ravnopravnih specijalista stvaraju sve šire konfederacije, prema funkcionalnim načelima, u odnosu na sve kompleksnije društvene ciljeve.

Polazeći od iskustvene činjenice društvene diobe rada, ljudska se kooperacija promatra kao dijalektički proces s jedne strane sve detaljnije diferencijacije, a s druge sve intenzivnije integracije tako diferenciranih elemenata u sve kompleksnije cjeline.

Kao instrumenti integracije razmatraju se osobito pravila, planiranje i autoritet u raznim fazama razvoja kooperativnih sistema.

Dijalektička interakcija diferencijacije i integracije stvara sliku razvoja kooperativnih sistema koja se sastoji iz kvantitativnih promjena u diferencijaciji i kvalitativnih skokova u kojima se mijenjaju svakodobni integracioni okviri. Sam porast diferencijacije najprije se ubrzava unutar svake integracione faze, a zatim usporava kad se približi postojećim granicama koje mu nameće relativno kruti integracioni okvir.

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