Economic Policy Design:
Principles and Urban Applications

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The science of Economics is turning over like a lake. Waters that have long rested in the deep are welling to the surface, long stagnant top layers are on their way down. This paper represents a groping for significant questions, not an array of neat answers, it is a tentative summary of issues in economic analysis and policy design that are pertinent to the current urban scene. Therefore it is not based on a completed set of ideas, but is a step leading to their formulation and interrelation. These ideas are part of our cultural heritage, nurtured and watered by many individuals cultivating the spiritual garden of political economy and the social sciences. Much applied work needs to be undertaken to test these questions in concrete situations having to do with long-term problems of urban economic and social policy design.

1. The New Perspective in Economics

ECONOMIC STRUCTURE AND NEOCLASSICAL ECONOMICS

Questions of economic structure which are the main issue in policy design for long-term urban development are not accessible to standard Economics. The conventional approach focuses on the microcosm of decentralized market adjustments and takes the institutional framework as given. The inadequacy of the conventional approach can best be illustrated by a parable. The German architect, Frei Otto, designs enormous, multi-peaked, tent-shaped structures whose curving, saw-toothed walls are too intricately shaped to be mathematically computed. A wire model of the edges of the structure is therefore dipped into a soap bubble solution to define optimally shaped walls that are formed by surface minimization of the soap film. The resulting model is photographed, and the walls of the actual structure are dimensioned on the basis of this model. Since practically all of the surface of the model consists of soap film, would it be fair to argue that there is essentially nothing to Frei Otto’s style but the law of surface minimization? This is the position of some classical economists with regard to the operation of market and the structure of the economy as a whole. In a market economy, the soap bubble walls are the many small, decentralized, individually unimportant market decisions that take place day to day. Yet these decisions do not make up the overall shape of the economy. The wires in the model are the limited number of institutional, social, and political decisions within which the numerous market decisions are embedded.

Karl Polanyi (1957) has elaborated the concept of the ‘embeddedness of the economy in society’ in the context of primitive and ancient societies, yet he failed to recognize the extent to which our own economy is similarly embedded. The Congressional mechanism and lobby determining agricultural policy, the Federal and State regulatory commissions on which the regulated industries have major representation, the legislation setting tariffs and quotas on foreign trade, the autonomous decisions taken by the giant national and multinational firms—these are some of the more obvious wires framing the American economy. Others are labor, anti-trust, and environmental legislation, special and national development laws (railroad concessions in the XIXth Century, offshore oil leases in the XXth), provisions governing urban land development, or Federal and State Government policies in locating major public facilities.

Some important wires in the frame require more detailed analysis to detect. The recent Cambridge theory of distribution has shown that the economy-wide ratio between wages and profits is exogeneous to the market system and results from forces of political economy. Major indivisible choices and economies of scale also require decisions outside the market. Finally, fundamental decisions are required on the very areas in which organized markets are allowed or encouraged to operate. The American Civil War was fought over the publicly stated issue of whether or not human beings ought to be marketable commodities. A similar issue can now be even more seriously raised concerning urban land.

In principle, an economy could be conceived that was framed just by a handful of basic choices involving political-economic institutions. Such an economy would take the few really important decisions on principles that transcend the market, while leaving the myriad secondary decisions to the market. In actuality, there exists a hierarchy of political-economic decisions within which the market is embedded. This hierarchy ranges from acts of centuries-long national import, such as establishing private property in land, abolishing it in slaves, or digging the Erie Canal to deflect the Midwest trade from French New Orleans toward the East Coast, down to ephemeral local health ordinances whose effect is to protect marketing zones for local districts. A conventional economist interpreting overall economic structure by means of general equilibrium models falls into the error illustrated by the parable. While the overwhelming percentage of economic decisions might follow the regularities of cost minimizing and profit maximizing market equilibria, this by no means determines the structure of the economy as a whole. As the soap bubbles are bounded by the wire frame, so market decisions are embedded in a structure of social, economic, and political decisions whose logic is totally different from the logic of market clearing. The most sophisticated modern restatements of the mathematical theory of general equilibrium, such as that of Arrow and Hahn (1972), have backed away almost completely from the claim that market processes explain the structure of any actual economy. Yet vulgarizations of the theory, expressing a particular outlook on the nature of social and economic reality, persist and are used both as classroom material and ideological backing for policy decisions. The mathematical abstractions are meanwhile spun out into a finer and finer gossamer.

THE NEW OUTLOOK

The upwelling of new ideas and approaches in Economics is paralleled in other social sciences, and comes out of a funda-
mental cultural shift in the perception of reality. Thomas Kuhn, in his treatise, *The Structure of Scientific Revolutions* (1970) has discussed one aspect of such shifts under the term paradigm changes. Kuhn uses this term to denote the set of basically untestable assumptions about reality that underlie the definition of problems, formulation of theories, and devising of methods of investigation regarded as legitimate. While Kuhn focuses on the role of individual scientists in propounding new paradigms, his discussion makes it clear that the emergence, dominance, and decay of paradigms is a broad cultural phenomenon that transcends the visions of any individual.

The paradigm concept has been repeated ad nauseam in recent academic debates yet there have been few attempts to broaden it. Kuhn's concept is closely related to what Edmund Carpenter (1959, 1970) calls the sensory profile of a culture. The perceptions of total reality by a white man and by an Eskimo immersed in an Arctic white-out are radically different, and this difference is projected into forms of expression through art. In an Eskimo drawing, the seal beneath the ice is clearly "seen." Likewise, Medieval culture differs from Renaissance culture in its sensory profile. The shared awareness of a social group reflected by the multiple focus of a Hieronymus Bosch painting, contrasts with the stress on the individual reflected in the geometrical Renaissance perspective centered in the eye of a single beholder.

Major upheavals in the sensory profile of a culture are like earthquakes; they begin with the subliminal forerunners of macroscopic shocks deep below the crust. While artists are often the first to register changes in a culture's perception of reality, both the artist and the scientist respond to a change in the sensory profile of the culture. Scientists no more create new paradigms purely out of their head than artists invent new ways of looking at the world purely out of their imagination. The exceptional individual draws on hidden currents permeating society as a whole; hence the unity of the new theme which informs all aspects of the cultural shift.

Economics and the other social sciences have come relatively late to the perception of the new theme that has resounded widely in the arts, in the media, and in the new lifestyles that surround us. Carpenter sees the essence of the change as a transition from the linearity of a written tradition, with its emphasis on the self-contained society of the eye of a single individual, to the multidimensionality of all-sense perception in a group setting. He interprets this change in part as a return to earlier oral traditions stretching back to tribal cultures, and sees the change as reflected, supported, and, in a measure caused by the technology of electronic communications media: "the medium is the message." The mark of both the changed contemporary sensory profile and the earlier cultures operating in the oral tradition, is the unity of sense perceptions, the refusal to chop up the stream of experience into one-dimensional analytic segments, the definition of relationships as involving total individuals rather than situational social roles, and the emphasis on the unity rather than on the conflict between the individual and the group.

The change in the contemporary sensory profile which comes to full flowering in the new styles of art is one option. The change in the economy of the nation's company, the change in the nature of the individual units in the company's hierarchy, the change in the perception of the single unit, all these changes can be seen as the result of the general change in the perception of the individual, in the culture as a whole.

In physics we owed a great debt to an early relativistic view in linguistics which was crushed and went unrecognized for decades thereafter; both were preceded by the artistic revolution of the Impressionists. That revolution, in turn, was contemporaneous with the first abortive revolutionary stirrings consciously aimed at overthrowing the established capitalist social order in Europe. Those stirrings were inspired and illuminated by the magnificent view of man and society in the life work of Karl Marx, destined for a century of conscious—unconscious—refusal by the mainstream of Western social science. Thus paradoxically social science was born both the first and the last to be influenced by the new perspective.

In Economics, the changed perception of reality reflects itself in a shift from viewing society as a "sandheap of disconnected individuals" (Max Weber) to perceiving the social system as a seamless web. Conventional neoclassical Economics visualizes the social process as the composite behavior of atomistic "households" and "firms". As against this atomistic perception of society, the new perspective in Economics emphasizes the essential unity of society-wide institutions. This gives new legitimacy to earlier analyses of class structure, power relationships, phenomena of class consciousness, and ideology—all of which are unanalyzable at the level of atomistic economic units. As against the essential uniformity of the anonymous economic units, the new perspective emphasizes their individuality and variations; and against their isolation, it emphasizes the richness of qualitative and quantitative relations between them which ties them into a single unit. As against the one-level stage of economic action, the new perspective emphasizes the tendency toward hierarchical arrangements between units, involving the nesting of subsystems within subsystems. As against a delimitation of the subject matter of Economics to the study of decisions and patterns resolving around resource allocation and pricing, the new perspective views all fields of social science as complementary aspects of a single whole.

As many of the elements of the emergent contemporary sensory profile hark back to far earlier cultural traditions, the new perspective in Economics also draws key elements of its strength from a new upwelling of earlier ideas in the history of economic thought. In its emphasis on the determination of structure, it revives the tradition of the Classical economists: Smith, Ricardo, and especially Marx. The decisive influence of Marx' work on the emerging new perspective in Economics is particularly striking in the following regards.

First, a broad, system-wide, integrative setting of the economic problem, flowing from the understanding that concrete phenomena are the unity of many aspects. Only partial aspects are reflected in particular abstract analytic concepts. Such abstractions, which taken individually lead to a distorted and misleading view of reality, must be re-integrated. Often the re-integration is best accomplished in a historical sequence, reflecting the development of concrete institutions. The result is a concrete concept which is the counterpart of the many-sided concrete reality. From this methodological principle follows the emphasis on historical, institutional, and other qualitative aspects of economic problems, as against the neoclassical preoccupation with their timeless quantitative attributes.

Second, focus on the connection between political power and the structure of production, leading to emphasis on polarization and conflict as agents of structural change.

Third, recognition of the key role of social science in throwing light on the connection between political-economic interests and
ideologies, with special emphasis on Economics as ideology.

The Policy Role of the Economist

This last idea—the role of economics as ideology—is of key importance, because the economist plays an ambivalent role in the formulation of social policy. He is conventionally portrayed as a high-level systems analyst; yet he can be equally readily seen as a priest or a prophet.

Conventional Economics portrays its practitioners as the possessors of neutral, value-free knowledge that is independent of specific applications. The economist works out the logic of economic systems at all levels from the individual house-hold to firms, to the national or world economy. The chain is made that technically he is able to serve equally well a corner grocer or a Rockefellow, a Hitler or a Ho Chi Minh. He is said to work out a menu of choices having no policy bias of any kind, leaving actual choices to the policymaker.

The ambiguity of this view comes into the open when it is suggested that the economist is, then, essentially a glorified operations researcher. This view turns out not acceptable in all to the profession. It appears that in order to be able to interpret economic phenomena in a neutral and value-free manner, the economist must be steeped in the scholarly tradition of economic science. In order to think correctly, he must have been ordained a Doctor by a recognized department of Economics. No engineer, mathematician, or sociologist—no matter how cogent his reasoning or how persuasive his evidence—can pronounce valid doctrine in Economics, for in addition to worthy knowledge there is also hidden, sacred knowledge that appears to be indispensable for legitimate economic thinking. This arcane knowledge is handed down from generation to generation through the chain of the Apostolic succession, from one Professor of Economics to the next.

From the new perspective in Economics, the role of the economist cannot fail to be ideological. Yet it need not be the role of the priest who stands next to the King in defense of the existing social order. There is an equally age-old but counter-ideological tradition; the tradition of the prophet.

The prophet is the counter-ideologist. He shines his light into the dark shadows lurking behind the false rationalizations by which an established social order lives. His social role constitutes the self-referential faculty whereby a society becomes capable of knowing, understanding, and remaking itself. According to Jurgen Habermas (1970), psychoanalysis helps the individual to get behind the neurotic rationalizations concerning his own motives, so social science at its best helps society to get behind the ideological rationalizations concerning its own functioning.

The insight gained in this manner can never be complete, since the search itself relies on postulates about reality that are in part ideological; yet the process of search leads to a change in perspective. Nor can the insight gained in this manner be permanent: the prophets of yester-year turn into the mythological heroes of priorities of the new order. The need for social self-revelation never ends.

II. Principles of Policy Design

The new perspective in Economics, embattled against a well entrenched economic establishment, must necessarily be counter-ideological and prophetic in the sense of the previous section. Its policy recommendations are based on the proposition that the crucial aspect of the future is its unblesses to the past. Policy for the future must therefore be grounded in the design and evaluation of structural change.

This perspective is just the opposite of conventional economic policy analysis and planning whose mainstay is modeling the future on the past. Essential structure is assumed invariant by projection techniques at all levels of sophistication, from simple time series extrapolation to the construction of complex econometric or mathematical programming models.

For example, in the usual projections of national product by major industries, the capital/output ratios and inter-industry coefficients are assumed to remain constant. Upon recognition that such an approximation is too rough (e.g., mark-up coefficients improve over time) the constancy assumption is transferred to the policy coefficients to their time trends. This ignores the invariance of structure by making the trend parameters part of the structure. Similarly, when it is recognized that projections based on constant import coefficients in input-output models can lead to intolerable foreign-exchange gaps, the equalization of the foreign exchange market via import substitution or export diversification is built right into a suitably defined linear programming model. What is assumed to remain constant here is the underlying market-clearing mechanism based on comparative cost calculations by cost-minimizing enterprises. With respect to regional urbanization projections, it is customary to project population increases, zone by zone, in terms of additional urbanized areas of the same density as the one within which such increase occurred, and geographically as close as possible to the parent zone. This is the method adopted by the latest official state-wide land use plan in New York.

In the conventional projection method, structural change is countedenance only to the extent that past trends are so obviously on a collision course that there is no way of overlooking them. When this happens,
structural change is held to the inescapable minimum that will allow postponing the looming crisis by a few years. Policy made in this fashion is akin to a biological stimulus-response pattern: it is conservative, mechanical, and unable to deal with the essential openness of the future in an imaginative and constructive manner.

The postponement of structural change is the essence of the new perspective in Economics. Yet until now, much of the required change has been left implicit; its purpose has been more to furnish a point of view for social criticism than to lay out explicit policy options for the future. Pilot efforts aiming to translate the new perspective in Economics into concrete policy design must deal with three crucial considerations: first, the extent to which future alternatives are bound by the past; second, the criteria which allow the evaluation of alternative options; and third, the possibility of creating the qualitative openness of the future within a qualitatively open process of social choice.

CONTINUITY WITH THE PAST AND PLANNER'S FREEDOM

The focus on structural change in policy formulation does not eliminate concern with the past, but changes the nature of this concern. Instead of attempting to carry as much as possible of the past into the uncertain future, the new perspective treats the past as a constraint on future structural options. This constraint is more binding for the near-term than for the distant future.

The constraint may make it impossible to undertake a given structural change in less than a stated minimum time. For example, if automobiles equipped with internal combustion engines were replaced by electric cars, the changeover would be constrained (at the very least) by the available production capacity for the new cars. Or, if the major population concentration in the New York metropolitan area were to be dispersed a few hundred miles inland, the transition would in all probability take more than a generation. Institutional changes have transition times that may be hard to estimate. How long would it take for urban patterns to adapt to the socialization of land within all existing SMSAs? The constraint of continuity with the past may show up in the form of a trade-off between time and effort. If a rapid changeover is required, this may involve substantially greater social effort. Yet often the transition cannot be slowed down indefinitely. In developmental economics, the theory of the "Big Push" has been recognized for a long time. It often takes a concentrated dose of high-intensity effort to get a given change going at all; more gradual transition attempts may well fail and short. In terms of alternative geographical designs of future urban development, self-contained new cities cannot be shuffle over twenty years, they require a critical mass to be going concerns at all, and this critical mass must be built up rapidly (Victoria, 1971).

The question of ties to the past raises the issue of planner's freedom in formulating alternative structural designs for the future. If suburban sprawl has been the mark of modern metropolitan development in the United States and much of Europe, does the planner have the freedom to sign it away by fiat? If automobiles are the overwhelmingly prevailing mode of metropolitan transportation, is the policymaker free to cut down car use by ninety percent and substitute public transportation? If industrial location has been governed by decentralized choices of private enterprises, is the planner free to define future urban patterns in which industries appear at locations that make sense for the planned option but are in conflict with long-established private practice?

Starting from the new perspective in Economics, one might be tempted to assume that everything is possible once the option of fundamental structural change is opened up. Yet this is an illusion. We vividly recall a conversation some time ago in Hungary in which we naïvely preferred the view that blessed is the city planner in a Socialist society, for he can plan freely for the public good, unhampered by irrational private interests. Our city planner friends were greatly amused, and pointed out the thousand and one constraints under which they had to operate. These ran the gamut from vestiges of private property in housing (expropriation is expensive and at time difficult), through budgetary constraints, to irrationalities of public opinion that demand more private automobiles no matter what the social cost, and to international trade agreements that severely restrict the types of prefabricated housing practically accessible for use.

Some may object that all that this proves is that Eastern European Socialism has not carried structural change far enough. Yet eyewitness reports from Cuba, as well as the recent spate of reportage from China, uniformly attest the enormous importance of carry-overs from the past even in the midst of a highly revolutionary situation.

To us, planner's freedom means that any type of structural change becomes conceivable: that none is ruled out at the start. Yet a careful evaluation procedure is required to establish how much effort each type of structural change involves. Some of the effort can be measured in money terms, and financial barriers are constraints apply. Some of the cost is in the nature of a social effort; many things that require a social effort are possible individually, but this does not mean that they are off possible immediately or at the same time. For example, in considering planner's freedom in regard to industrial location, relatively large shifts in the locational patterns of clusters of related industries are possible at small sacrifice in additional production or transport costs. Therefore, the planner can push around industries to follow settlement patterns at low cost in national income, provided that he can assume the institutional changes which are required for the con-urbanization and industrial location decisions. These institutional changes are not extreme; Swedish or French planning practice involves the daily exercise of comprehensive discretion on the part of planners.

Some of the required changes, while radical, may not be explicitly political in nature. Undoubtedly, a major social effort would be required to make American shift from cars to public transportation. It might involve the restructuring of transport, urbanization, and industrial location patterns, all of which are politically highly loaded. But over and beyond these changes, there would be an enormous effort in gaining public support or at least reluctant acceptance of the need to reduce total car miles travelled.

The illustrations of future policy options provided so far are relatively narrow in copur: automobile use, city and regional design, industrial location. Or, at least, they appear trivial compared with the great issues of change implied by the difference between a commercially oriented society and one that turned to the cultivation of more human values. Yet often smaller changes, if they are to be viable, imply a series of supporting changes. Like a stone dropped in a pond that raises ripples in all directions, a seemingly minor but genuine structural change probes the entire institutional environment with which it is entwined.
The policymaker committed to the defense of an established social order therefore sees any genuine structural change, no matter how minor and inoffensive-looking, as a wolf in sheep's clothing. On the other hand, if he is intelligent, he will be willing to contemplate reforms, some of them maybe quite far reaching in appearance, so long as the fundamental structure remains untouched: "plus ça change, plus c'est la même chose."

The policymaker operating out of the new perspective is committed to structural change. If he operates in an environment where deep structural change is possible, he will design and evaluate future policy options for actual implementation. He will then encounter the constraint of the past in the form of scarce material resources and in the form of the social, political, and educational effort that must be invested in success fully implementing fundamental institutional changes over a limited period of time. If he operates in an environment where major structural change is for the time being ruled out, he will still find it essential to design and evaluate future policy options. The dead hand of the past will then prevent the immediate implementation of such options, but these will nonetheless serve two essential purposes. First, they will point up the contrast between the actual and the possible which is the essence of social criticism and the building of a new consciousness. And second, they will often lend themselves to the construction of Trojan horses that have the appearance of reforms but carry the agents of genuine structural change.

**Judging Alternative Policy Options**

In judging alternative policy options, the approach implied by the new perspective in Economics can best be put in a negative way; get the monkey of maximization off your back!

Students trained in conventional economics require years of effort just to get to the point where they are able to see an economic policy issue as other than a maximization task. This problem is deep; it goes to the root of conceptual thinking.

As Nicholas Georgescu-Roegen (1971) has recently pointed out in the context of Economics, Western logic, mathematics, and much of philosophy from Aristotle to Hegel has been based on Aristotle's notion of a well-defined concept, which was modeled on the notion of number. A numberlike (or "arithmeton"") concept never overlaps with its opposite; Aristotle the notion that "A" and "not A" are mutually exclusive is a self-evident postulate, as it indeed is when we are concerned with numbers. But when we are concerned with qualities—which are the essence of direct human experience—Aristotle's postulate makes no sense.

"Hardness" and "softness" are meaningless in themselves; in reality there is only a hardness-softness continuum, and one of the polar terms is governed by context. A rain may be termed "soft" in relation to his daughter and "hard" in relation to his business competitors. Such concepts which overlap with their opposites are termed by Georgescu-Roegen "dialecetic" concepts. Lost it appear that the ambiguity which is re-directed to belles lettres, he emphasizes the dominant role played by qualities in many branches of the natural sciences. Physics, the most abstract of all, harbors the branch of strength of materials which is rife with qualities (including hardness and softness). Chemistry stands apart from physics mostly because its generalizations never keep pace.

*Georgescu-Roegen is careful to point out that his use of the term "dialecetic" does not exhaust the full meaning of Hegel's use of the term.*

with the emergence of unexpected qualities through combination; not to speak of biology which is built on structure and quality.

Neoclassical economics is a web of abstractions from which qualitative phenomena are carefully excluded. And for good reason, because the concept of constrained maximization which occupies the inner sanctum of neoclassical doctrine, makes sense only in a world of Aristotle's numberlike concepts. In this world, it is evident that economic alternatives can always be represented as members of a set defined by resource constraints. Given such a set, choice can be interpreted as picking the best element of the set, where "best" is defined by a mathematical function that is to be maximized.

The admission of qualitative change into Economics destroys constrained maximization. Georgescu-Roegen has shown that if it makes sense to think of a mathematical set of individual qualities that are to be used to map a process of qualitative change, then the cardinal power of this set is greater than the cardinal power of the continuum. In a constrained maximization problem, each individual quality involved in qualitative change plays the role of a resource which helps to define the choice set through specific constraints. The choice set, therefore, becomes unmanageably large.

In plain English, constrained maximization is a poor way of thinking about qualitative differences. Horse shows and architectural competitions are never judged in this way, and for a very simple reason. A striking entry represents more than the sum of its parts; its quality resides in its totality, in its uniqueness, in the apt interrelatedness of the whole and its parts which can not be reduced to hands of height, or square feet of usable space.

Yet no systematic process is involved in making judgments about such alternatives. In judging horses, a thorough familiarity with all characteristics that make for a really fine horse is a prerequisite. Anyone who would be a judge has to spend time and effort in getting to know these characteristics under a variety of conditions in which a piece of horse may be required to perform, the individual horse can be judged only in total awareness of these characteristics one by one and in relation to each other. Similarly, in judging alternative entries in an architectural competition, the jury must have much previous familiarity with architectural design problems, and must spend time steeping itself in the specifications of the competition before the merits of alternative designs disclose themselves.

Accordingly, in evaluating alternative policy designs, two specific processes are involved. First is a thorough familiarization with all the individual aspects that are relevant to the policy choice. Second, on the basis of this familiarity, a judgment is made of the overall impact, the transcendent of conventionality, the essential uniqueness of a striking policy design.

This evaluation procedure, therefore, goes beyond the procedures of constrained maximization. While the individual aspects of a design may be thought of as corresponding to the individual constrains involved in the definition of a choice set, the aspect of a design are qualitative phenomena that, as Georgescu-Roegen has shown, cannot be reduced to a catalog of numberlike concepts. The judgment of overall impact may similarly be thought of as corresponding to the maximization of a mathematical function; yet what is involved here is the perception of internal interrelatedness, uniqueness, transcendence of convention all of which involve answers to questions which have never been asked before, in other words, they involve the emergence of new
dimensions through the creative quality of a specific design.

All of this leads to an interesting conclusion about policy choices. Georgescu-Roegen asserts that number-like concepts are one very special, ultra-simplified abstraction from real, qualitative concepts. They are drained of blood, so to speak, but in turn they become amenable to the simple rules of mathematical logic, which makes them immensely attractive for formal argument. Erroneous reasoning in number-like concepts can be readily detected, because it involves the violation of specific formal rules. No such simple formal rules have ever been devised for disconcerting argument in real-life, flesh-and-blood, qualitative concepts. Therefore, if some aspect of a problem can be adequately represented by number-like concepts, the exploration of that particular aspect becomes greatly simplified, and the results can thereby be readily checked for internal consistency.

Among processes of change, the process of homogenization is unique in that it can be adequately represented by number-like concepts; in consequence, there is a long scientific tradition of attempting to reduce more complex phenomena of qualitative change to processes of homogenization in suitably defined spaces. Thus processes of change, when drained of their qualitative aspects, are represented by homogenization, just as real concepts, when drained of their qualitative content, are represented by number-like concepts.

The analogy can now be extended to policy choices. When real policy choices are drained of their qualitative content, they reduce to constrained maximization. In this form they become subject to the logical rules that apply to manipulating number-like concepts; their exploration becomes enormously simplified, and the internal consistency of the choice process becomes easy to check.

A constrained maximization problem can be solved by a computer. Yet a judgment of real, qualitatively different policy designs is beyond the ken of the computer, for the essence of this judgment is the joy in answers that disclose previously un-asked questions. A good design is not simply the solution to a pre-set problem. It is an enrichment of the problem as originally defined, an opening up of new dimensions, a discovery of emptiness in space that had been thought of as structured, the shoring of a light into an unsuspected void, the creation of a new world from literally nothing, no task for a computer.

The analogy extends further. As we pass from the bloodless choices of constrained maximization to the full-blooded judgment of real-life alternatives, we lose simplicity and easy verifiability as we gain the flesh-and-blood realism of qualitative differences. The ambiguity of judgments is notorious. The task of the hermeneutic sciences—historiography, aesthetics, ethics, philosophy of law—is precisely to clarify the criteria upon which valid judgments can be made, in a manner supposedly free from the personal or social biases of the individuals who are involved in making such judgments. Yet these criteria themselves are subject to shift. The established Academy rejects the paintings of a Rousseau, who is later acclaimed as the genius of a new vision of reality. According to Habermas (1971), the hermeneutic sciences claim too much when they attempt to speak for the key to objectively valid judgment. The best that can be achieved is the clarification of the bases of a consecutively valid judgment out of the perspective of a given cultural tradition. This brings us back full circle to the clash between the priestly versus the prophetic perspective in economic policy analysis. Judgments involving alternative policy designs inescapably carry the full ideological voltage separating those who wish to stabilize the existing social order from those who wish to change it. A reduction of policy judgments to constrained maximization offers a seeming escape from this conflict, by separating the definition of "a" "norm" of objective alternatives from the "value judgments" involved in choice. Yet in the reduction, the most important aspect of judgment, the focus on the creative redefinition of the original problem, is lost. And lost with it is the self-referential quality of social science at its best, the comparision of social reality as it is with what it might potentially be.

A final word on constrained maximization. In our discussion, above, the issue was whether a choice set and objective function exists or not. If it is assumed that the choice set not only exists but is also convex, then the process of constrained maximization will lead to a set of prices that are the analogue of prices prevailing in a perfectly competitive market. This is highly desirable from the perspective of neoclassical Economics. Yet in constrained maximization problems involving alternative structural designs, even if these are drained of their qualitative content and reduced to number-like concepts, the resulting choice set will generally not be convex. Convexity would require that any weighted average between alternative options should also be a legitimate option. Yet, for example, a 50-50 weighted average of a railroad track designed to run on the left bank of a river and a railroad track designed to run on the right bank of a river would be riding the waves at the center of the stream—an obvious piece of nonsense. The discontinuities and other nonconvergent introductions into the choice set by structural design alternatives deprive the maximizing solution of its interpretation in terms of market prices. In addition, such nonconvergences typically make the computation of a maximizing solution (or a reasonable approximation to it) cumbersome, difficult, and expensive.

Deprived of its ideological function, constrained maximization remains useful as an operations research tool that can shed light on selected partial aspects of a policy problem. Yet the main burden of policy analysis inevitably devolves on a process of overall judgement of policy alternatives such as has been discussed in the present section.
were dead, with their decorative central plaza, complete with fountain and abstract sculpture, deserted of a Saturday afternoon, while nearby old-fashioned rows of boutiques bustled with life.

The best design is one that conveys a unity of conception with the least use of detail. A good parallel is provided by a Japanese technique for drawing, e.g., a bunch of flowers. At first a fully detailed, naturalistic, Dixon-like drawing is made, which is then overdrawn with tissue paper. On the overlay the original is retracted and varying detail is then erased. As the work progresses, the number of remaining lines steadily diminishes. A great drawing conveys a full sense of the original, with an enormous amount of detail omitted. The same philosophy in another medium produces the classical Japanese poetic form of the haiku.

A structural approach to policy alternatives that ignores this principle will inevitably lead to heavy, dead designs that can be disastrous if implemented. A good policy design therefore defines a given overall conception in terms of a skeleton structure that leaves the largest possible amount of detail for implementation at the grass-roots level, and much of it at a future time. In the design of future urbanization patterns, for example, it is sufficient to define a skeleton of transport arteries and settlement densities distributed over geographical space, complemented by basic institutions pertaining to the ownership of urban land and the functioning of labor markets. The industrial structure compatible with a given transport-settlement skeleton turns out to be highly adaptable and variable.

Assuming a large measure of continuity with pre-existing commercial modes of production, it is sufficient to ensure the presence of a handful of large employers at new settlement centres, to attract hundreds of additional enterprises under normal practices of cost-minimizing industrial location. Thus most of the industrial structure need not be planned in detail.

III. Policy Design and Dialogue


The last example given in the previous section assumed that the planned skeleton will be filled in by market processes. But this need not be the case. If large institutional changes are within the realm of possibilities, the holes in the skeleton of the planned structure may be filled in, for example, by consumers operating on a decentralized basis.

The new perspective in Economics leads to a rejection of both the market and bureaucratic central planning. Anss Lindbeck, in his critique of the New Left (1971) has correctly identified this double rejection as the essence of the approach to economic policy flowing out of the new perspective. Yet Lindbeck then went on to conclude that this constituted a head-in-the-sand refusal to choose between the only alternatives available in reality.

If there are crackpot idealists, there are also crackpot realists who conclude on the basis of common sense that the Earth is flat. From the new perspective in Economics, bowing to the choice between the market and bureaucratic central planning is crackpot realism, locked on a much too narrow view of the nature of social systems. Our earlier model of the operation of a market economy was based on such a market and must now be generalized. We prefered the parallel of the wire frame spummeed with soap bubbles in which the wires represented institutions and other aspects of social structure; the soap-bubble walls represented the decentralized adjustments of the market.

This model is based on the notion that many complex biological and social systems are made up of lower-level subsystems in two complementary ways. First, the subsystems may be linked into a structure of fixed topology, like the wires of the frame in the parable. Second, the subsystems may interact as random units, governed by the laws of entropy maximization, like the molecules within the soap-bubble walls. The conception of a system as the unity of structural and entropic aspects is an appropriate model not only for the operation of real-life market economies (as distinguished from the abstractions of general equilibrium theory), but also for the ecological adjustment of populations within a given environment, or the military balance between nation-states.

Invariably, the outcome of entropy-maximizing adjustments is hierarchical. Such hierarchies are found in the distribution of incomes among households, in the distribution of firm sizes, in the well-known rank-size rule for the distribution of cities, in the distribution of biological species in a given natural environment. The structure of the system provides the constraints within which entropy is maximized.

From the perspective of the structural/entropic model of society, it appears that there is an inevitable choice between the market (or some ecological equivalent based on competitive pressures) and authoritarian central decisionmaking. Yet the two are in fact complements that can be used in varying proportions. Real-life societies are embedded in an institutional framework whose structure and changes depend on social and political decisions proportionately influenced by narrow power groups, in a manner quite analogous to central planning. Indeed, in private-enterprise economics such as France or Japan, a large measure of explicit economy-wide central planning can coexist with decentralized private market decisions. The United States now finds itself at this very crossroad.

If the market and bureaucratic central planning are complements, their joint rejection implies going outside the confines of the structural/entropic model of society. Is such a thing possible?

The structural/entropic model certainly applies to all political societies. From the early archaic kingdoms to modern capitalism, according to Stanley Diamond (1974) civilization has been founded on conquest and repression at home. This has resulted in societies that have been hierarchically both in their relations among each other and in their social relations within. The available processes of production and the social organization of these processes have created the institutional structure within which individual persons, households, or social groups have lined up into a hierarchical political order.

Given such a framework, the positions of individual units, and their transitions from one hierarchical level to another, have been governed by laws of ecological interaction. The structure underlying the hierarchical levels, according to Marx, is determined by the relationship of human beings to the means of production, giving rise to social classes. The conflict between classes, interacting with changes in the processes and social organization of production, has been the motor of long-term structural changes in the grand socio-economic analysis of history found in the works of Marx. The simple structural/entropic model of society set out above is consistent with (although it does
not, of course, exhaust) the sweep of this detailed analysis. Is it, then, possible to step outside the imperative of this political reality?

Mars himself anticipated the emergence of the classless society under ideal communism, but has given no details of its structure and functioning. The classless society is, nevertheless, not an abstraction but a fact of concrete experience. All societies that are "primitive" in the sense of the anthropologist are classless societies. They do not contain political hierarchies, and in many ways resemble extended families. Their internal functioning is governed by modes of human interaction that rise above the ecological competition within structural constraints which produce the hierarchies of archaic or modern political societies.

The modes of human intention that organize primitive societies are the same ones that continue to organize the intimate relations of family, friendships, or some substructures in our day. Such interactions involve total human beings rather than narrowly defined social roles, and form the highest valued aspects of human existence. They represent a different, higher, and more fully human level of system organization as compared to rigid structural relations or ecological competition. The transition from the primitive to the archaic and later to modern civilization represents a step backward in regard to human relations, no matter how great the increase in complexity or material control over the environment may have been.

The ideal of the Golden Age of recapturing modes of human interaction that were dominant in primitive societies and have been submerged since then, has been a recurrent theme throughout the history of civilization. It is at the root of the aspiration to stepping outside the structural/entropic model of society that characterizes the critical perspective in the social sciences. This ideal leads to the search for decentralized, communal social units which are to be linked together by truly human modes of interaction rather than by the dog-eat-dog ethic of political society. That is, by policy design of this kind has ever been worked out, much less successfully implemented, does not render irrational attempts at designing policies that leave open the possibility of change in this direction. Only out of the emptiness that complements the skeleton of a policy design can the new questions grow which might permit answers leading in the desired direction.

Healing with Genuinely Human Differences

On the modern political scene the so-called anarchist tradition has combined the rejection of the market with a search for decentralized, humanistic modes of social organization. Unfortunately, this tradition has crippling biases; of which two are of concern here: a rejection of all multi-level organization, and a romantically rural, anti-urban emphasis. These biases make it particularly unsuited for dealing with urban problems; unless the underlying approach can be generalized to remove these biases.

The anarchist tradition rejects multi-level organization because it equates such organization with exploitative political hierarchy. There are strong grounds for this equating, since it indeed applies to all civilized societies. Political hierarchies are arising from primitive societies, but such societies are too simple to offer convincing examples of multi-level organization; so it would seem that the anarchist tradition has a correct insight. Yet this is not necessarily so.

While in the domain of social systems we can offer no example, in the only other domain in which comparably complex systems occur—biological systems—it is certainly not true that multi-level organization is tantamount to exploitation. Brain cells cannot be expected to exploit each other for survival of the organism as a whole, they are provided with special shielding, special nourishment, and in the emergency of starvation, are protected to the last.

Multi-level organization, according to Herbert Simon (1967), is indispensable to the development of complex systems, since the probability of achieving complexity by the instant, full-blown coordination of many components is too low. Complex systems evolve through the coordination of previously independent systems of lower complexity, which become subsystems within the hierarchy. In this way one additional level of organization is established. For example, free-living single-celled organisms form colonies of cells having identical functions; the transition to genuinely multi-celled forms involves specialization by different cells and the coordination of functions into the unity of a single organism. Individual nucleated cells themselves are thought to have evolved from simpler cells that survive today in bacteria and blue-green algae; there is evidence that internal organs of nucleated cells may at one time have been free-living, individually reproducing organisms.

It is dangerous to argue from analogy, and the use of biological analogues for social systems, much abused in the past by human ecologists and others, is in particular bad odds. The possibility of multi-level organization without exploitation in biological systems does not prove that the same can apply to social systems. All it shows is that not all highly complex systems must necessarily be organized by exploitative hierarchies. A way might therefore exist to achieve a high degree of complexity in a social system without using exploitative political structures as an organizing device.

This possibility is important, because there is no return to the social simplicity of primitive societies. Many of the essential achievements of modern civilization, for example in health, in knowledge about nature, or in knowledge about ourselves, depend on complex social organization. And it would do us no good even if we all agreed to sacrifice these benefits for the superior human relation that characterizes a primitive society. Only a minority of those alive today could actually achieve a return to the primitive; the rest would have to die off, since the primitive mode of production could not support current population densities. Yet in the end, the same processes of social transformation which have called forth archaic civilizations from primitive societies in many independent instances the world over, would probably do so again.

There is every reason to believe that primitive societies, as anarchist-utopian communities in our age, are undermined not only by their inadequacies, but also by their very successes. Of course primitive societies confronting more advanced civilizations are overpowered by military technology and the weight of numbers. But in an age when all societies are primitive, the highly successful society will be the one to rise above subsistence, to develop a more complex technology and specialization, to develop a surplus, to develop choices, and in the end, to develop a political hierarchy.

The road away from political hierarchy therefore cannot lead back to the primitive, but must be sought forward, in new modes of social organization embodied in particular policy designs. The challenge is to establish complex multi-level systems without setting up motivations for organizing that will lead directly to exploitation. In a market society, the capitalist's motivation for
frightening differences that modern society fashions out of class, work specialization, race, sex, age, religion, ethnicity, ideology, nationality, and many other sources. The genius of modern society is precisely its ability to evoke at one time and place such a brilliant starburst of different human potentialities. This starburst opens up a new dimension in human experience; it represents a great step forward as compared with the primitive. Yet, as Hans Jonas has pointed out in his philosophy of living things, *The Phenomenon of Life* (1950) every step up the ladder of life, from the emergence of metabolism to the emergence of consciousness, has achieved a new dimension of potentiality at the cost of a new dimension in precariousness. Living things that roam the land can get into trouble in more ways than living things that float on the tide. Human consciousness is beyond the animal world in its ability to create symbols, but it is also prey to the internalization of oppression and other disorders of the symbolic function. From this outlook, it is not surprising that the new human potentialities opened up by modern society should at the same time turn out to be a Pandora's box not known to the primitive. The challenge of dealing creatively and dialogically with genuine human differences is thus the very own challenge of our age; it is the reward for having travelled the human road this far; it comes directly out of the complexity of the social organization of production that modern society has already achieved. This challenge cannot be met except by answering countless questions that have never yet been asked.

**THE UNHEAVENLY CITY TRANSCENDED**

This brings us to a second crippling fault of the anarchist tradition, its anti-urban bias. The fear of multi-level organization goes with a fear of the hierarchy, the complexity, the political hierarchy of the metropolis. This fear feeds on the experience of the destruction of traditional rural ways of life as the metropolis expands, and on the ills that rural migrants to the metropolises are known to fall prey to. In many strands of social thinking, the critique of modern society enters with the critique of the metropolis, leading at one extreme to a naive rural romanticism, and at the other to the armageddonic collapse of the dominant or morally decayed metropolises, as in Spengler's *Decline of the West* (1928-29). Yet parallel with the mistrust of the metropolis, another tradition of social thinking also exists. "Stedelijk muist frit—city air sets you free, free from the feudal lord, the tyranny of the narrow rural culture—is an old European adage. It lacks its echo in the sociological analysis of the hospitality the metropolis extends to marginal people, people who in some important way differ from the norm of the mainstream, from bohemian artists to professional criminals. This hospitality is replicated on the broader canvas of social groups; the metropolis harbors many subcultures which many encounter either in continual overt clashes yet learn to survive in an environment of genuine this means that we must learn to respect other additional need for cultural uniformity and purity, as discussed by Sennett's study, *The Uses of Disorder* (1973). A closely related theme is sounded in Foucault and Perceval Goodman's *Communities* (1990). They show that the aspiration to a single homogeneous philosophy of life which gives rise to our latter-day utopian communities, eventually...
becomes a choking constraint that weakens and destroys them. The metropolis is the factory that produces the diversity of modern society. Together with this diversity, it also produces some measure of tolerance of differences; moreover, its very existence undermines the viability of small, closed communities aspiring to homogeneity in their ways of life. The metropolis is thus the arena in which the challenge of dealing constructively with genuine human differences must eventually be met. The current proliferation of small, rural-based drop-out communities following in the footsteps of the anarchist tradition in seeking alternative lifestyles, will therefore point into the future only to the extent that it is a preliminary gathering of forces before entering the main fray within the metropolis. Encirclement and defeat of the "metropolis"—it equated with the modern big city—are not likely to work for the road into the future leads through the transcending of metropolitan culture by means of new ways of human interrelatedness. These grow out of the essence of metropolitan culture, not out of its denial.

The diversity of modern society displayed by the social organization of production, and the resulting diversity of ways of life and interests, comes out of access of large numbers of human beings to each other. Even in an ideal society of the future, a club of lovers of space clean is unlikely to spring up in a rural backwater; there are just not enough people with this common interest to be found anywhere but in a very large social aggregate. The limitations of transport and communications at present require high density for broad mutual access. This may or may not change with future technologies. The need for access, however, will not change; it is the key to the higher-level society we are gradually, painfully, reluctantly getting ready to move into. The metropolis is the laboratory of this new society. Its study, for purposes of economic and social policy design, becomes meaningful only if informed by openness toward the future from which at least the dim outlines of significant questions are now beginning to emerge.

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