The University of Design and Development
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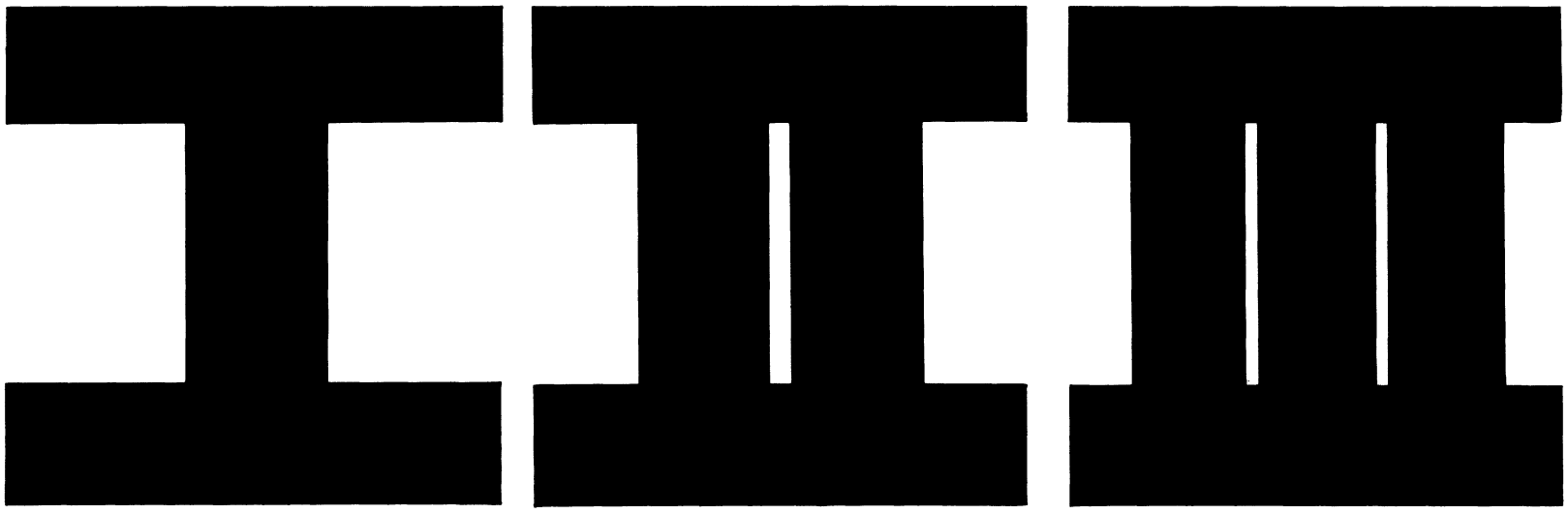
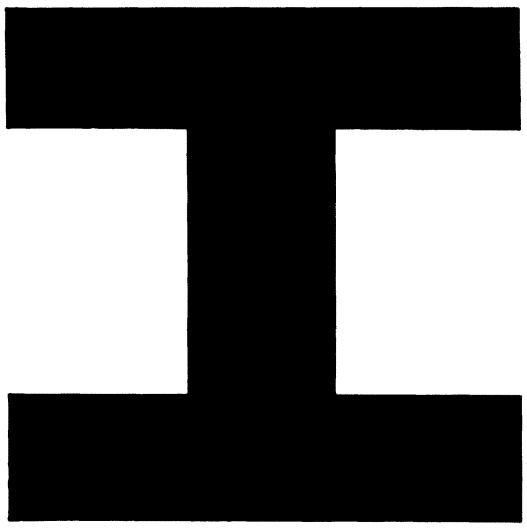
Manhattan: Capital of the Twentieth Century

The Designs of Freedom





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A. As the natural milieu replaced the divine milieu in becoming Renaissance man's primordial area of concern, so has a newly emerging man-made milieu become the all pervading framework of contemporary man's thought and imagery.

It has become increasingly evident that the profile being adopted by this new milieu is escaping control — that the future will provide only a continuation of the present if facts of technological feasibility, rather than new values of human existence, remain the accepted shaping forces.

The present climate of opinion has, thus, become pervaded by a feeling of "environmental crisis."

"Happy ending" views to the contrary, there is no evidence that the events of this milieu answer to the same laws as Newton's apple, and that technology carries in itself the response to all the difficulties it raises. The structures, functions, and processes of the man-made milieu, understood as the patterns of interaction of complex adaptive systems, are not analogous to the workings of physical systems.[1] There is no reason, therefore, for hoping that the aimless actions of technology will eventually accommodate themselves to a providential pattern of order.

It is a fact that all our economic, social, political, and cultural phenomena are situated in this technological content, and that all our choices are, therefore, based on ideas, judgments, values, beliefs, and myths which are, to a great extent, functions of this technological society.[2] These remarks would tend to reinforce either the viewpoint of those who are skeptical of the possibilities for positive action, given what they believe to be the deterministic nature of technology, or the viewpoint of those who uphold the notion that technology belongs to the metaphysics of the twentieth century because it has been, so far, beyond our control.

Although they are correct when they warn us that we may be running the risk of reinforcing the worst of the man-made milieu when we inevitably resort to techniques in order to gain mastery over techniques, the supporters of the pessimistic view side, in spite of themselves, with the supporters of the optimistic position when both refuse to evaluate strategies for action. For evidently very different reasons, the two positions neglect to contemplate the possibility of establishing a framework for the evolution of a state of consciousness capable of mediating between man, nature and the technological forces, and which would, in this manner, be favorable to the development of a hitherto unformulated system of thought capable of giving meaning and order to the man-made milieu, i.e., capable of designing it.

B. The development of a system of thought capable of designing the man-made milieu has not prospered, so far, partly due to the difficulties inherent in breaking away from accustomed patterns of thought and envisaging alternative future states, and partly because what has been in our culture the dominant mode of beholding reality, the scientific method, though indispensable as a support for design activity, is inadequate as an overall approach to design.

Interpreted in a narrowly mechanistic form the scientific method is clearly inadequate for designing a desired future because it breaks the organic unity of experience by treating only the measurable and the quantifiable. But even if one takes a broader view of the scientific method and acknowledges that it has been variously successful in dealing with organic phenomena, still it will not do as an approach to design. For the scientific method is meant to deal with the given, with what is, whereas the designer must deal with the aspired to, with what ought to be.

Laws of nature are assumed to be given and immutable, and the scientist's task is to reveal what they are. The designer, unlike the scientist, must at some level, himself define the nature and set the requirements of the task that he will attempt to satisfy. He must not treat what he finds is taking place as the scientist treats the processes of nature, for that would imply assuming that the given fully determines what can be aspired to.

The guiding ethical principle behind the scientific method is objectivity, fidelity to things as they are rather as one would like them to be. The truth of any scientific statement must be an independent fact and not a function of the observer. This is an admirable ethic and salutory for anyone, including the designer, who seeks a grasp of the actual. But the designer must deal not only with the actual but with the envisaged, take into account not only objective facts but subjective wishes; the scientist's commitment to the given is for him unduly restrictive at best, and can at worst turn him into a mere instrument of ongoing processes and established interests. An ethic for the design method would, therefore, recognize the truth of any design statement is a socio-cultural function dependent on the values of the participants. Such an ethic would, thus, allow one's view of things as they are to be affected by what one would like them to be.

We must remark, however, that once a prototypical solution is arrived at and the ranges of its typological possibilities become known, it makes sense for the designer to adhere to the scientific method; a known possibility can be treated and analyzed as one would a given actuality. The scientific method is a powerful tool for such analysis of possibilities already formulated, and must therefore be comprehended within any attempts at outlining what may be called the *design system of thought.*

It should be noted, moreover, that the design system of thought — defined as the form generating actions by which man conceives and structures the physical and socio-cultural environments as wholes — is not opposed, but on the contrary, complementarily related to what has been defined as technology; i.e., the industrial and cybernetic institutionalization of science.[3] While technology can be understood as the activity by which qualities are organized into quantities in order to turn them operable, the new role foreseen for the design mode of thought should be understood as the act by which man, utilizing technology, synthesizes quantities into qualities.

Given the dialectic interrelations existing between man-made physical and socio-cultural systems, and the fully active, open, and transactional nature of man, it is imperative that the model of a system of thought capable of structuring, and restructuring the man-made milieu would have to comprehend an *empirical* as well as an *existential* conception of the Hows and Whys of man's actions and reactions.

In the *empirical* domain, this mode of thought would have to grasp in an operative manner the patterns of interactions existing between man and the natural environment, and in a more important sense, the constantly changing patterns of interrelations occurring between man and the man-made environment.[4]

The conception of a willed state involves defining goals and norms, relating large amounts of data, developing alternative solutions and selecting as most satisfactory that solution which, reflecting acceptable values or values which can in time become accepted, embodies some virtue not presently existent. Consequently, the explicit analysis of values is to be considered as one of the main features of this system of thought.

In order to introduce systematic and rigorous theoretical methods, this mode of thought will also have to introduce into its logic as a real factor the notion of an existential operator (man, as the intuitive synthesizer and maker of symbols).[5] That is to say, although man is certainly not the only living organism capable of altering his environment in order to maintain his essential physiological properties, he is, however, the only entity capable of generating images and undergoing ontological changes.[6]

In the *existential* domain, this mode of thought would, thus, have to conceive of man as he who creates experiential and conceptual structures in order to satisfy needs and conciliate aspirations, which go from the physical to the cosmological, within the boundaries of the natural and the socio-cultural world.

Obviously, the search for the development of such a system of thought would require a full-fledged body of inter-disciplinary imagination and analysis. Two questions, then, present themselves to mind: First, which scale of problems of the man-made milieu would render the maximum possibilities for research and insight? Second, do our present educational and research institutions have sufficient scope for the establishment of an inter-disciplinary exchange and do they have the power necessary for putting their design proposals into practice?

The *first* question can be answered if, when considering that by the year 2000 a very high percentage of the world will be living in urban conditions, we realize that the processes ensuing from such urban phenomena will not become comprehensible nor manageable by solely resorting to the methods applied to industrial phenomena; that any attempt at language renovation and invention can only result from a radical critique and postulation of urban practices and theory. Of all man-made structures, the many levels of meaning which are embodied in the social and physical models of urban existence would be the ones to render the richest source of insight in the development of a system of thought capable of designing the man-made milieu.

As we are reaching a situation in which the only valid approaches will be those comprehending the totality of the world system, the urban models to be considered should behold the natural and the man-made environment — the entire planet — as a complete and totally interrelated problem.

As for the *second* question, of whether the research and teaching resources of our present universities can be tapped to better understand and help develop the new system of thought concerned with the design of our urban environment, a pertinent answer can be extracted from the Ford Foundation's report on "Urban Extension."[7] From 1959 to 1966, the Ford Foundation made grants for experiments in applying the nation's university resources directly to the problem

of American cities. In the final report, of October 1966, the Ford Foundation stated that the experiments revealed that our present universities have yet to solve a set of critical questions if they are ever to deal effectively with the problems of an urban society. To the question "Are universities presently structured to assume urban commitments?" they confirmed everyone's suspicion in stating "that responsiveness to the urban environment calls for an across-the-board commitment. An isolated department or division devoted to urban affairs appears to have limited impact upon the problem as a whole." In addition, the report is explicit in saying that "the difference between the needs of urban extension and those of academic departments are more sharply drawn by university traditions and administrative structure than conditions actually warrant." As a consequence, the present training does not prepare the student of design for the task of assuming responsibilities. He is usually provided neither with the spiritual attitude nor with the intellectual equipment for acting creatively in a world where the posing and solving of problems has become a highly complex task of devising dynamic controls rather than arriving at final solutions.

These are familiar facts, but the conclusion drawn from them is what matters. If we agree with the concept that an education preparatory to designing our urban environment should include all the fields of socio-economic and physical inquiry and action which can give sense and structure to the human environment, we would then have to question very seriously whether the present highly rigid and compartmentalized structure of our universities does allow for an effective interdisciplinary approach toward questioning and designing our urban environment.

All these considerations have brought us to the point where we ought to begin considering whether the time has not arrived for formulating the idea of an institution explicitly concerned with the ethical framework of our society, and conceived toward developing the system of thought capable of designing our man-made milieu.

Such an institution will, of course, not immediately solve the problems of our urban environment, but it will go a long way towards transforming these problems into controlled processes. It is hoped that the conceptual scheme of such an institution would benefit from a dissolution of nineteenth century notions of deterministic systems which believed that not only did systems have to be simple and general, but also that human organizations, in consequence, could be planned rigid and finite. This institution, if it is to be meaningfully new would require a different notion of "system." We would, then, have to talk of a dynamic concept of complex system; indeterministic, designed to operate in a constant state of reform and adaptation to other systems, as well as operationally capable of acknowledging private values and emotions as essential factors in the large and difficult process of arriving at forms of commonly shared goals.

This institution should include all the disciplines which can give meaning and order to our social and physical environment. Thus, in addition to its core faculty in physical, biological and socio-economic design, it should be flanked by its own faculties in the behavioral and social sciences, in the exact and applied sciences, and in the humanities; which would be articulated according to research topics rather than by disciplines. Furthermore, it would be necessary that this institution take its proposals into the stage of development in order to gain feedback. Such a program for urban development would, therefore, require that both the government and the private sectors of the society be actively involved.

What is here envisioned is that if the traditional *concept of Universitas* is re-formulated according to the needs of a post-technological society, such Universitas should encompass the constellation of the different Western concepts of the university. The first of such concepts, is the humanistic university, the non-specialized idea of university, as conceived in the Greek Academies, institutionalized by the Italian and Parisian Universities of the Middle Ages, and re-formulated by Cardinal Newman[8] in the last century. The second of such concepts of university is the scientific, specialized idea of a university which deals with the empirical world, as envisioned by Bacon[9] and Descartes[10], and institutionalized by von Humboldt. The third of such university concepts might be constituted by the here-envisioned idea of an institution, which would deal with the processes involved in the physical and socio-economic synthesis of man's aspirations in conciliation with the facts of the natural and the socio-cultural environment. This re-formulated concept of Universitas, or constellation of universities, would thus represent the philosophic mode of thought in its humanistic university, the scientific mode of thought in its empirical university, and the design mode of thought in its university of design and development.[11] There would thus be, for example, social philosophers in the humanistic university, social scientists in the scientific university, and social designers in the university of design and development.

The tasks which would have to be assumed by such Universitas may stagger imagination and paralyze hope but they cannot be relinquished, as they would involve: first, the *retrospective* task of evaluating the consequences which have resulted from having made choices on the bases of values no higher than those derived of an acceptance of consumption as the existential motivator; second, the *critical* task of analyzing the socio-economic and the political institutions of our technological milieu in order to establish the effects they have had on our civilization's systems of ideas and emotions; third, the *prospective* task of envisioning and constantly expanding the framework of private and common values that should guide the physical and socio-economic design of our society; and fourth, the *operational* task of developing the physical and socio-economic methods necessary for implementing these objectives.

The fulfillment of these tasks will, however, require that prior to defining new areas of inquiry and action, and before developing new disciplines, we have the courage of conceiving of this Universitas, both as the model of beholding the meaning of man's condition and as the way for imagining and implementing the quality of our existence in terms of a humanity made milieu.

The main points of this section's argument have been first presented at a lecture given at Princeton University School of Architecture and Urban Planning in the Spring of 1968.

notes

1 "Adaptive systems possess the ability to react to their environment in a way that is favourable, in some sense, to the continued operations of the system." They are open, i.e.: ". . . they exchange materials, energies or information with their environment." (A. D. Hall, and R. E. Fagen. "Definition of Systems", *General Systems, I.*, 1956, pp. 18-28).

2 George Gurvitch, *Industrialisation et Technocratie,* (Paris: A. Colin, 1949).

3 For an introduction to the concept of socio-cultural systems see: Walter Buckley. *Sociology and Modern Systems Theory* (Englewood Cliffs, New Jersey: Prentice-Hall, 1967).

4 In systematic terms, the man-made environment is understood as the interaction between socio-cultural systems and physical systems. That is to say in a man-made environment man is related to a system of physical elements (objects going from the micro to the macro scale) and to a system of rules (behaviors, laws, habits, uses, morals, etc.) which interact with one another.

5 Anatol Rapport and William T. Horvath. "Thoughts on Organization Theory," *General Systems, IV* (1959), pp. 97-91.

6 Kenneth E. Boulding. *The Image.* (Ann Arbor: University of Michigan Press, 1956).

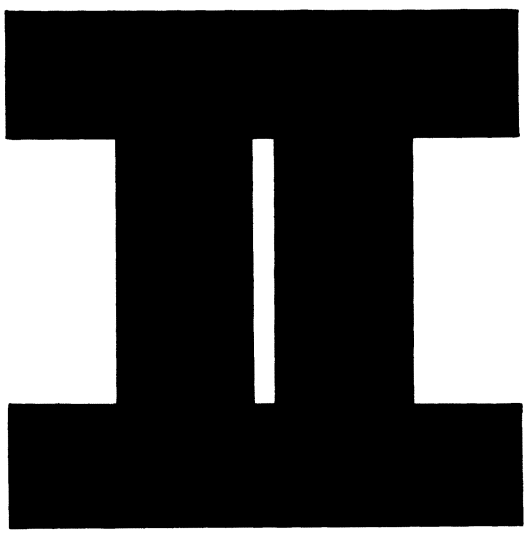
7 *Urban Extension.* A Report on Experimental Programs Assisted by the Ford Foundation. (New York: F.F., October 1966).

8 John Henry Cardinal Newman. *The Idea of a University.* (New York: Longmans Green and Company, 1947).

9 Francis Bacon. "The Advancement of Learning," *Essays, Advance of Learning, New Atlantis and Other Places.* (New York: Odyssey Press, Inc., 1937).

10 For Descartes' distinction between the faculty of arts (poetry and history) and philosophy which he divides into the special studies of mathematics, physics, and metaphysics; see his *Discourse on Method.*

11 I heard the term "university of design" first expressed at a lecture Tomas Maldonado gave at the Graham Foundation of Chicago, in 1967. In his lecture, Maldonado referred to a 5 year design education and research program which, in close alliance with the behavioral, the social, the exact and the applied sciences would be dedicated to educating environmental designers.



Manhattan: Capital of the Twentieth Century
"once I have grasped it, then an old, as it were rebellious, half apocalytic province of my thoughts will have been subdued, colonized, set in order." Walter Benjamin in a Letter to Gerhard Scholem

A. *1. Manhattan, unencumbered by permanent memory, and more interested in becoming than in being, can be seen as the city of that second technological revolution brought about by the development of processes for producing and controlling information rather than just energy. It has, after all, incorporated the worship of communication with the idolatry of the industrial product and, by so doing, provided the ground for supporting any infatuation with the now as the ultimate configuration of reality. However, seen in a different light, Manhattan may reveal an unforeseen potential for conceiving of a quite different notion of city.*

Manhattan is, in essence, a network. If beheld as an infrastructure for the processing and exchange of matter, energy, and information, Manhattan may be seen, either as the overwrought roof of a subterranean physical grid of subway tunnels and train stations, automobile, passages, postal tubes, sewage chambers, water and gas pipes, power wires, telephone, telegraph, television and computer lines; or, conversely, as the datum plane of an aerial lattice of walking paths, automobile routes, flight patterns, wireless impulses, institutional liaisons, and ideological webs. In any of these roles, the points of Manhattan's network have been repeatedly charged, on and off, with different meanings. Entire systems and isolated elements have been connected to and processed by these networks, only to be later removed and replaced by new ones.

2. Were we willing, for the sake of argument, to suspend disbelief, forget coordinates, and imagine that all present constructions have been completely removed, Manhattan's infrastructure would emerge — in all the complexity of its physical organization, the capacity of its input-output mechanism, and the versatility of its control devices — as the most representative urban artifact of our culture.

Freed in this manner from its current limitations, we may, to further this transfer operation, remove Manhattan's infrastructure from its present context and place it, for example, in the center of San Francisco Bay, on the plains of Africa, among the chateaux of the Loire Valley, along the Wall of China . . .

Manhattan's infrastructure, thus liberated, belongs to all. But an infrastructure, though necessary, is not sufficient to make a city. The next step is, then, for all to undertake the postulation of its possible superstructure. The methods may belong either to remembrance or to invention, for, conceived as the idea rather than as the actual configuration, Manhattan's infrastructure provides the framework in which all crystallized fragments rescued from the city of the memory, and all figments envisioned for the city of the imagination may dwell in ensemble, if not by reasons of their casual relationships (since no reconstruction is hereby intended), than by grace of their affinities. The outcome of such undertaking may be agitational, and render, if not actual proposals of superstructures, at least an explicit Inventory of Qualities of urban existence toward a yet to be defined "City of Open Presents".

3. In a first, retrospective phase, *we may, as one of many possible approaches, assemble piecemeal any surviving fragments of memory on the infrastructure:*

bologna's arcades
osip mandelstam's st. petersburg
john nash's regent's park
gabriel's petit trianon
katsura's promenades to observe the sunset
mies' barcelona pavillion
wallace stevens' wind on a wheatfield
john soane's house
frank zappa's los angeles
baudelaire's fleeting instants
debussy's submerged cathedral
michael heizer's land marks
joan littlewood's fun palace
ray bradbury's brown clouds
le notre's gardens of chantilly . . .

This tearing of the fragment from its former context, this rescuing of the irreducible word from its sentence, involves not only the usual process of design by discriminate selection but suggests, moreover, a process of bringing together where, instead of establishing fixed hierarchies, the fragments rescued from tradition are placed on the same level in ever changing contiguities, in order to yield new meanings, and thereby render other modes of access to their recondite qualities.

4. In a second, prospective phase, *the form of any superstructure to be assembled on the infrastructure is to come from the domain of invention.*

But envisioned qualities do not come in wholes. They are to be apprehended as they rush by — partial denotators of an inversed tradition, of possible states which may become; and once grasped, they are to be dialectically confronted with the many meanings which can be temporarily assigned to our fragmentary experience of the Present.

If beheld as icons, the architectural and ceremonial forms which these constantly changing superstructures may adopt represent an instance in the perennial state of transaction between the fears and desires underlying the individual's aspirations and the assembled forces of the natural and the socio-cultural milieus. If unfolded, these superstructures would provide an insight into the goals and the values of their designer: man, the private being and the member of society.

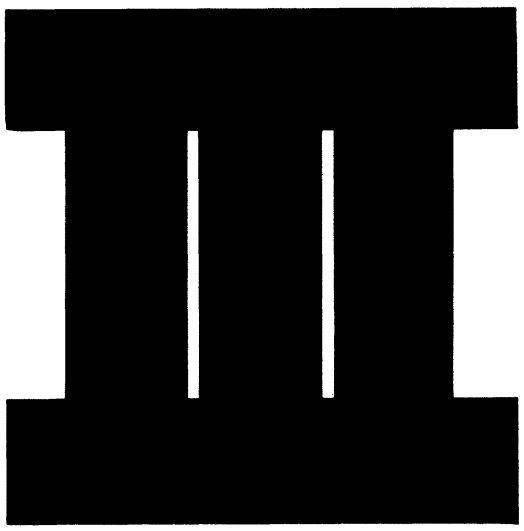
Expanding the Inventory of Qualities of urban existence by this process of interpreting the meaning of the individual values and goals underlying the invention of superstructures involves bringing the subjective content of these individual values up to a communal objective level so that they may be accepted or rejected by the community.

This process of expanding the community's ethical framework involves observing or projecting the possible effects these values, if implemented, may have on the community, and assessing communally whether these effects are to be enhanced or reduced. As the meaning of these superstructures can only be interpreted in the context of the patterns of relationships it establishes with other superstructures, this process generates new meanings which in turn will require further interpretation. By this reiterative process the envisioned superstructures assume constructive powers. Insofar as they question the context of the Present, they assign it new meanings; insofar as they propose alternative states, they re-structure it.

B. The quality of human existence is the principle which is to guide the communal process of designing and constructing the house of our individual realities. Both methods, rescuing the irreducible fragments from their decayed contexts, and interpreting the different possible contexts which may give meaning to imagined figments — in a word, designing superstructures as a method for inventing and learning about the form that new qualities of human existence may adopt — suggest possible approaches toward interpreting a culture through the superstructures it creates, as well as aid toward creating the images and developing the models of new socio-cultural systems.

But, as we may soon realize once we return to our customary state of disbelief, no model of co-existence with the city of the memory will be found, nor will the configuration of the city of the imagination become evident until the system of thought and action capable of designing the two according to new ideological and emotional values shall have been developed. Then, we may see that the changing configurations of the emerging city and those of the constantly renewed systems of thought which are developed to design it, are always isomorphic. It may also become evident that such structural transformations will only take place after new institutions, concerned with developing such design systems of thought and capable of designing the man-made milieu physically and socio-economically, have been established. Perhaps then, after these specific conditions have been satisfied, but not before the unfolded meanings of remembered and of invented superstructures have begun to expand the realm of our valued qualities, will the Universitas become the Univercity, and the City of Open Presents come into being.

The Universitas as we have conceived it is not to be a detached observer or passive entity. It must actively participate in the creation of the man-made milieu, be concerned both with the question of what goals are to guide man in this creation and with the problem of how resources are best to be allocated toward attaining these goals. In such pursuits, it should acknowledge what contemporary experience has shown, namely, that authority over resources and means of production, or the opposite position — withdrawal from any such involvement — is not enough to insure the quality of our environment; that a humanly made milieu may only come about if we also develop ways for continuously self-designing and self-managing it.



The Designs of Freedom

A. Man creates artifacts in order to conciliate his individual aspirations with the constraints imposed by his natural and cultural worlds. In creating his artifacts he seeks to attain some goals: goals of which he may or may not have a clear grasp and which the actual artifacts may or may not satisfy. Artifacts have to be interpreted after they come into existence so that their true meaning can be learned; and once their meaning is learned and compared with the original goals which motivated their design, man may want to modify them or to design other artifacts, or he may choose to revise his original goals or even his basic values. Man's transactions remain a strictly individual process if his goals can be satisfied by means of his own resources, or if satisfaction can be attained by a mere internal reorganization of his system of goals. But the satisfaction of an individual's goals may require pooling resources with another individual and in some degree combining their systems of goals. In this case, a goal proposed by one individual must be formulated objectively, according to agreed convention to enable the other individual to accept the proposal as an input.

Agreement by at least one other individual to the joint pursuit of at least one such postulated goal establishes a group. A group itself may be regarded as an artifact designed by an individual to satisfy his need to transact with other individuals. A group will in turn transact with other groups, and they may all agree to constitute together the larger artifact that is a society. The transactions and conflicts that take place in a complex society often determine that the pattern of this agreement — usually called the *social contract* — undergo constant transformations.

B. The measure of a social system, like that of any artifact, is the degree to which it fulfils and allows to be fulfilled the purposes of individuals. Informing the following proposal that the Universitas contribute actively to the constant examination and reformulation of the social contract is the desire to insure, as much as possible, the freedom of the individual to will his environment.

One may feel pessimistic about the prospects of such freedom in the present political context. But awareness of a state of crisis and analysis of its symptoms are the privileges of reflection. Designers, even if torn by perplexity, must identify problems, propose alternatives, and develop methods to implement them. The proposed design of the Universitas is meant to help resolving two opposing positions on the present predicament. One position holds that by letting the technological infrastructure proliferate without a harnessing superstructure, we would discover embodied in the products of this technology all goals we may wish to imagine; the other position counters that the individual can best satisfy his aspirations by himself or in small groups at the most, that his superstructures do not require much in the way of support from an infrastructure. The first position subjugates the goals of the individual to the productions of an overpowering technology; the second, to the constrictions of an undeveloped one.

The Universitas must be, therefore, so designed as to help resolving these conflicting positions by acting as a mediator between the processes of the infrastructure and the goals of the superstructure, and by attempting a synthesis of individual goals into proposed states that may be adopted by other individuals. As a guide in our description of the roles that we envision for the Universitas in society, we propose to introduce first a working model, outlined below.

C. Members of a group, as we have seen, are brought together by certain goals which they have agreed to pursue jointly, and by certain pooled resources — resources of matter, energy, and information — which they will allocate and structure as they think best with the aim of reaching those goals. But, as it happens with the artifacts that an individual builds, the actual structures that a group creates may not satisfy the goals for which they were created, and may imply other goals which the members of the group did not have in mind. A structure, after it comes into existence, must be interpreted, its true meaning learned in the context of its interaction with other existing structures and of the larger configurations these structures establish.

Let us look at this operation in terms of a network model. An individual conceives of some goals that he may want to propose for adoption by others. He reformulates this proposal according to agreed convention and makes a postulational input which, if accepted, establishes a network of group relationships. The group may then proceed to build a structure which it believes will satisfy this proposal. A reorganization takes place of some of the points and patterns in the group network. This reorganization is fed back to the network as an internal message which is then decoded in the light of certain goals. As a result of this decoding further reorganization may take place; new structures may be built or new goals agreed upon.

Already a simple equilibrial feedback device performs some kind of *decoding* on the messages it gets from its environment, for they are followed by determinate changes in the behavior of the device in accordance with the goal it is designed to pursue: this goal can be said to set up a code by which messages are assigned meanings. A sufficiently complex dynamic feedback network is able to decode messages in a number of different ways — according to different, perhaps contradictory goals its structure may imply. And the decoding of messages in such a dynamic self-modifying network does not simply trigger a change of behavior but may result in a change of goals — that is, in a process of *code-making* or icon invention.[1] A network setting itself new goals is inventing new codes by which it interprets messages — messages that may come not only from the environment but also from within the net itself.[2] back network, a group of human beings is oriented by its patterns of organization, toward the attainment of some goals of which the individuals in the group, as a whole or in part, may or may not be conscious. It is by a decoding not only of external messages but also of internal patterns — of the very structures designed to carry out what the group sees as its goals — that the group can become conscious of what its actions and processes are likely actually to lead toward. Discrepancies revealed between the actuality and the aspirations may bring on a change of the existing structures or a revision of the original goals. Like any sufficiently complex network, a human grouping will have various levels of goals; there will be larger, more comprehensive goals in terms of which the more immediate, intermediary goals are to be interpreted. To these larger goals correspond larger configurations of interacting structures: the meaning of any given structure must be decoded from these larger configurations, a proposed revision of immediate goals pondered for its possible consequences in terms of overall purposes.

It is convenient, when considering these code-making and decoding processes, to distinguish two kinds of structures within a network and four functions exercised on these structures. For purposes of discussion, we will consider the case of a group network, although the same concepts would apply to individual and to social networks.

The system of goals shared by the members of the group may be said to constitute a conceptual *superstructure* which is supported by a physical *infrastructure* into which the available common resources have been organized. In practice, of course, there never is a perfect correspondence between a given superstructure and the underlying infrastructure.[3]

These concepts of infrastructure and superstructure although necessary for describing *formally* the organization of a group network are, nevertheless, not sufficient for distinguishing *functionally* the different feedback processes which take place with the group network. We ought, therefore, to introduce the notion of four distinct though interrelated functions which operate on the group network and govern the interactions among the various infrastructures and superstructures created by the group.

The *monitoring function* performs the task of decoding and of bringing to the consciousness of the group the results of its decoding. It analyzes existing structures for their implied goals and possible consequences; it recognizes and interprets the larger configurations that these structures establish; it projects as possible future states the aspirations and proposals contributed by individual members and attempts to decode these envisioned structures.

It is through the *postulative function* that new structures are envisioned, alternative goals and the corresponding new patterns proposed, new codes invented. Whereas the monitoring function decodes, the postulating function makes codes.

In operational terms, the postulative function accomplies its roles by designing alternative new or modified structures of resources which embody the new or modified goals it postulates for the members of the network to accept or reject. The postulating function is exercised by the individual members, who as private individuals have their own dreams and aspirations which at first may make sense only to themselves, but which they may be able to recast in group terms as suitable inputs for the group network. As a rule it is through such inputs from private individuals (from such inventors of patterns as artists, social thinkers, poets, designers) that a group network becomes aware of possible new states it may aspire to, new configurations which would assign alternative meanings to existing structures, and new structures which may be built to replace the existing ones.

It is by the individual members too that the *decision making function* is to be exercised in the group. They must decide, on the basis of the analysis and projections provided by the monitoring function, which among the existing patterns in the group network are to be maintained, which suppressed and which augmented, and which among the alternatives proposed by the postulating function are to be accepted and which rejected.

Finally, we have the *regulatory function,* which is exercised through the infrastructure and is in charge of implementing the choices of the decision-making function by controlling the supply of matter, energy, and information to each of the points in the group network.

D. The four functions that we have described for a group network also exist for the larger social network. But they may exist in thwarted or inadequate forms. It may happen, for instance, that the monitoring function is effective only within the smaller group networks and not for society as a whole, so that each sector of society makes its own decisions unaware of how these may affect the other sectors or the life of the whole. Or it may happen that, after a certain stage, the postulating function effectively ceases, goals are set and cannot be renewed, all changes are assumed to be predictable and all points in the social network are assigned fixed meanings; the system is closed.

Closed systems inevitably run down; if a system is to renew itself it must be kept open, and open above all to postulational inputs which as we have seen usually originate with the individual. Since these postulational inputs are for the most part made locally, into the group networks, it is only through an effective monitoring function that these individual postulations can be made to carry into the group, and, in certain cases, into the larger social network.

Other institutions in society may also enact the four functions described in our working model; however, for the purpose of this essay, we shall restrict our argument to solely defining the roles we foresee the Universitas and the individual members of society playing.

We propose that the Universitas, *conceived as a general concept rather than as a specific organization,* undertake in formal terms the related functions of monitoring and postulating.[4] Individuals, in addition to exercising the decision-making function in formal terms, also participate actively, though in a random way, in the performance of monitoring and postulative functions. One of the immediate intentions of this proposal is that the monitoring and postulating done by the Universitas strengthen that done by the individuals — the formal exercise of these functions by the Universitas would complement their continued non-formal exercise by the individuals acting on their own. The long range objective underlying this proposal is to reverse established technocratic hierarchies of decision-making by helping the individuals of the community to assume the four functions aforementioned in a decentralized manner.

Such long-range objectives clearly establish the transitional nature assigned to the Universitas. As a transitional institution it should be regarded, for the time being, as a special type of group network[5],one analytically attuned to what is occurring in the other group networks, so that it may be able to keep track of local patterns initiated by individuals and groups, of the possible offshoots these local patterns may have and of the larger configurations they have established or are likely to establish through their interaction; all of which it would be charged with bringing up to a level of social consciousness. And it will be charged with monitoring, and of bringing to consciousness, not only existing local patterns but also local aspirations, the postulational inputs made by individuals into their group networks. Furthermore, we are proposing that the Universitas itself take on a postulative task, that it itself propose, for the individuals of the community to accept or reject, new goals and rearrangements, putting much of the same formal equipment that served for decoding to the complementary task of code-making.[6]

As to the decision-making and regulatory functions, it is best that the Universitas not be involved with them except as they are inevitably bound up with the monitoring and the postulating ones.

The right of choice exercised through the decision-making function must remain with the individuals of the community; otherwise what we get is a dictatorial arrangement — the Universistate. Such active postulating and efficient monitoring as we propose that the Universitas undertake is meant to buttress individual decisions. The regulatory function should not be exercised by the Universitas either. This in general should be as independent as possible from the monitorizing and postulating functions, especially, since there is the danger that, were the Universitas to become involved with regulating techniques, it might end up accepting the constraints and dynamics of technical feasibility as the main guidelines for its postulations and recommendations.

E. The laudable ideal that individuals and small groups be able to pursue their own goals by themselves and enact their own local patterns as they see fit usually takes no account of the fact that often the fragmentary and strictly piecemeal enactment of supposedly local goals and conceptions may show them to be bound up in large measure with those of others, and significantly altered by their place in the larger context of society. Because interactions and configurations may extend far beyond an immediate vicinity, it is only through feedback from points everywhere in the network of society, that individuals and groups can get to learn if the local patterns they have initiated actually satisfy and continue to reflect what they want.[7] This feedback the Universitas, by its monitoring action, is intended, within its scope, to supply.

By this feedback process new goals can be introduced locally, in a decentralized manner; (without gravely disrupting the larger fabric of individual and group life), its circumscribed effects can be observed empirically and, from the pattern of ensuing consequences, it should allow establishing whether this specific goal is to remain a local process, or further postulated for acceptance by other individuals and groups.[8] Moreover, the linking of local patterns which the monitoring Universitas will attempt, may contribute to the expansion and enrichment of these local conceptions through knowledge of how they interact and overlap with those of others.

Beyond this linking actions, the more important postulative action by which the Universitas will attempt to develop methods toward implemening individual and group goals may contribute to making it possible for individuals and groups to remain independent while marshalling some of the greater technological resources of society's infrastructure for the enactment of their own patterns and the satisfaction of their own private purposes. Moreover, by postulating alternative future states, the Universitas will aid in combating the inducements to accept the outcome of ongoing technological processes as something beyond individual control. By this formal postulative action, and by the bringing of isolated individual postulations to a level of social consciousness, the Universitas may be expected to broaden the scope of envisaged futures and thus help bring about the true aspirations and desires of individuals, what their visions tell them ought to be rather than what is presented to them as possible.

The concept of the Universitas which we have here developed may serve as a prototype for any artifact designed to support a self-modifying ethical system in which social goals are derived from individual values and come to be agreed upon through the goals that individuals pose and the proposals they enact. If capable of constantly re-examining the scope of existing social goals in the new light cast by the individual goals it brings up to a level of social consciousness, such an ethical system would provide a design for individual freedom, where authority is not bestowed on any specialized agent but is defined by the whole of the social network, and remains the sovereignty of each of its individuals.[9]

It is a paradox that any system capable of allowing the greatest possible individual freedom, the fullest possible personal enjoyment of the pleasures of the senses and of the spirit, will not be some sort of unstructured Arcadia but rather a highly complex physical and socio-cultural artifact. Individual man is not man in isolation (for him Arcadia would be fine); but man as he willingly transacts with others, joins with them, and chooses to accept the constraints of various patterns of organization. Individual freedom for such a man lies not in the absence of constraints but rather in their *design*: this must reflect his wishes and work toward achieving his aspirations.

notes

1 The internal and external feedback processes by which man, the individual being, expresses his aspirations, and formulates them in terms which are accessible to other individual members of society, have already been treated in a previous paper. (Emilio Ambasz, "The Formulation of a Design Discourse," *Perspecta 12,* The Yale Architectural Journal, New Haven, 1968.) It proposes a theoretical construct to comprehend the feedback processes by which an individual designs artifacts in order to conciliate the conflicts between his private and his social being. The terminology is different from that here utilized, but the concepts are similar: the artifact resultant from (a) design (process) is considered, in Charles S. Peirce's terminology, as an icon, whose symbolic content is conceived as an internal system of codes which must be decoded, i.e., brought up to a semantic level for further information and interpretation on the goals of the individual code-maker and those of his socio-cultural environment.

2 We can distinguish two types of procedures for goal renewal or modification. By the first one, *internal* to the network, new goals are derived from the meanings which the goal patterns inside the network may generate, consciously or unconsciously, when interacting with each other. By the second procedure, goal renovation assumes the form of *external* inputs originating in other networks. Both processes allow the network the freedom to break or over-ride established goal patterns, and, thus, introduce the concept of an autonomous, creative function capable of postulating new goals.

3 This network of resources should theoretically be able to shift its position whenever the intersection of the goal patterns determining the point have changed positions. Thus, a given structure can be said to have lost its social meaning when following the dynamics of socio-cultural processes the goal patterns which once determined the point shifted. However, it may happen that due to the inertia of the social network, the infrastructure of resources continues to supply the same position even after the patterns of goals has shifted. On the other hand, a powerful infrastructure may of itself generate "false" superstructural patterns, i.e., not wished by the members of society, but imposed by the demands of the infrastructure's pathology. I have in mind the case where the present production system imposes its own system of demands on the individual and endeavors to establish its own internal needs and goals as those determining the patterning of society's superstructure.

4 The specific tasks which the Universitas is formally prepared to perform in the context of the social network have been described in the closing paragraphs of Part I "The University of Design and Development," as *retrospective, critical, prospective,* and *operational.* The first two are tasks of consciousness which would correspond, to a great extent, to those to be

performed by what we have defined as the *monitoring function.* The prospective tasks of envisioning and proposing new goal patterns to be evaluated by the members of the social network; and the operational task of developing the methods necessary for structuring these prospective proposals, fall very closely within the realm of what we have defined as the *postulative function.*

5 As all specialized groups, the Universitas will unavoidably have its own evaluative bias. The important fact in this case is not to reject its actions, but rather to take such bias into account as an explicit factor when pondering the results of its monitoring and postulative functions.

6 In a sense, what the Universitas will be doing when it undertakes a formal postulating function is an extension of its monitoring function to postulating inputs that ultimately come from the minds of its own individual members; the Universitas merely provides a conducive formal framework to the postulations of its individuals.

7 This description applies, obviously, to ideal feedback conditions. In practice we have to allow for and deal with degrees of disfunctional tolerance.

8 Individuals must always have the freedom to reject postulations they may get, whether from the Universitas or from other individuals. The refusal by an individual to go along with a goal postulated by a group of which he is a member might serve to check the momentum that group patterns often develop of themselves, goals generating structures and structures generating goals without regard for individual values, (I have in mind those participating today in moratorium movements). Such refusal of a postulational input may well constitute a meaningful counter-input that the individual makes into the group, and, rather than being dismissed as an instance of individual alienation, it merits conscientious examination by the Universitas and by the members of the community.

9 These notions are further expanded in an article to appear under the title: "The Designs of Anarchy."

Conclusion

We have attempted here the briefest sketch of the roles we contemplate for the Universitas in the design of the man-made environment. The arguments for this discussion were based on a proposed understanding of society as resultant of the interactions between individual networks and their groups. These distinctions were introduced with the intention of rendering, on one hand, a keener insight into the interrelated processes by which man and society invent and modify their goals, and, on the other one, an approach to designing the social network's functions in a way such that they will contribute to the coherent examination and expansion of society's framework of goals without compromising the independence of the individual and the group networks.

Considerable revision and elaboration will no doubt be required if our abstract outline is to be carried out in actuality. Most of the issues we have raised would certainly benefit from further analysis. We have not touched on such questions as how do we avoid that the regulating agencies become the protectors of those forces they were created to regulate?; what are the political mechanisms by which the individual exercises his evaluative and regulatory functions so as to check on the formal and non-formal exercising of the monitoring and postulative functions; what type of community government system is implied by a network of society where the sovereignty of the decision-making functions resides in the individual members of the network?; what delay will be tolerable in the feedback processes occurring between the four functions?

The truth of any statement regarding the design of our man-made milieu is a socio-cultural function dependent on the individuals of the community. We can not trust, therefore, any answer to be final; a permanent state of questions rather than a conclusive configuration is the pattern.

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