

# An Informational Perspective of Planning:

## A New Conceptual Basis for the Study of Planning

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### 1. Planning as an Information System

Planning is the human-social activity that is designed to act upon and react to the environment for the purpose of changing it. In this conceptualization, planning is inherently an information system resulting from dynamic interactions between information and its human users.<sup>(1)</sup> This view can be clarified further by looking into the ongoing transactions taking place across the boundary between the system and its environment, which can be observed in terms of the system's major functions: input; conversion; and output.

These functions are viewed here to be fused into an integrated process.

The input is the information the system takes from the environment. It represents continuous "mappings" and "feedbacks" between the system and its environment, which bring some change into the definition of environment. It is vitally important for the system, particularly at its higher level (system-structure level) or at its initial stage, to redefine continuously new characteristics of the environment. Since "environment" is an image of ensemble of more or less distinguishable entities and processes of reality,<sup>(2)</sup> it is

(1) For the theoretical basis for this conceptualization, see Bom Hu, "A Social Information System for National Development Planning of a Developing Country: Korea," (Doctoral Thesis, State University of New York at Buffalo, 1974), Chs. 2, 3, 4 and 5. Another similar definition of information can be found in John M. Roberts, "The Self-Management of Culture," in Ward H. Goodenough (ed.), *Explorations in Cultural Anthropology*, McGraw-Hill, New York, 1964, pp. 433-453. Cf. Karl W. Deutsch, *The Nerves of Government: Models of Political Communication and Control*, The Free Press, New York, 1966.

(2) For the relations between image and plan at the level of individual behavior, see George A. Miller, Eugene Galanter and Karl H. Pribram, *Plans and Structure of Behavior*, Holt, Rinehart and Winston, New York, 1960. For an application of images to national development planning, see Bom Hu, *op. cit.*, Ch.4. For the relations between images of the future and culture, see F.L. Polak, *The Image of the Future*, Oceana Publications, New York, 1961, Parts I and II. For a general theory of image, see Kenneth E. Boulding, *The Image: Knowledge in Life and Society*, The University of Michigan Press, Ann Arbor, Michigan, 1956.

meaningless unless its spatial and temporal characteristics are translated into informational contexts.<sup>(3)</sup> To avoid "buzzing noise" or "banging confusion" on the one hand and to match relevant constraints and varieties of the environment on the other,<sup>(4)</sup> some selection criteria, which we will call "contextuation criteria,"<sup>(5)</sup> should be developed within the information system. The setting of boundaries, that is, defining of the environment in relation to the system is a function of such criteria. From this viewpoint, the organization or management of contextuation criteria is, in its nature, an essential function of planning.

The information contextuation criteria are also associated with a mechanism for governing the relationship among indicators (system-variables), contexts (system-structures), (total) system and the environment. From the morphological perspective, the mechanism comprises the processes through which the cognitive, affective and normative functions of information can be integrated into a system.<sup>(6)</sup> We will call these processes "contextuating processes."<sup>(7)</sup> We also employ "contextual orientation" to refer to both the contextuation criteria and the contextuating processes.

Once inputs are selected from the environment in terms of specific contextuation criteria, they are transmitted throughout the whole system by

dynamic interactions between contextuating processes. Since their interactions take place through the integrated process of cognitive, affective and normative functions of information, the system becomes value-laden and has self-organizing capacities. For this reason, such planning functions as functions as future-inventing, norm-seeking, goal-setting, feasibility-testing, efficiency-developing, action-programming and implementation emerge during the transmission of inputs within the system so as to effectively match information. As a consequence, planning functions will be able to possess their own contexts of effectively matched information and to act upon and react to one another to convert the informational contexts into environment-changing causes (policies).<sup>(8)</sup>

To appropriately interact with the environment, those planning functions should be gradually structured into four levels of functional relations between the information system and its environment:<sup>(9)</sup>

- (1) normative mapping (normative planning-value-creating/norm-seeking/goal-setting);
- (2) strategic converting (strategic planning-reducing normative goals to feasible plans, that is, combining of effectiveness, feasibility and efficiency);
- (3) change-effectuating (operational planning-

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(3) In this study, informational context, not information-bit, is the basic unit to be used for planning. For this concept of information, see Bom Hu, *op. cit.*, Ch. 2.

(4) "Variety" is used here to refer to the distinguishable differences in an ensemble of distinguishable entities and processes, and "constraint" is employed to refer to the relatively stable causal relations between the entities or processes of the reality. The author is indebted for this concept of environment to Walter Buckley, "Society as a Complex Adaptive System," in Walter Buckley (ed.), *Modern Systems Research for the Behavioral Scientist*, Aldine, Chicago, 1968, p. 41.

(5) For the details, see Bom Hu, *op. cit.*, Chs. 2 and 4. For general criteria, see *Ibid.*, pp. 42-46.

(6) *Ibid.*, pp. 37-42.

(7) *Ibid.*, Chs. 2 and 4.

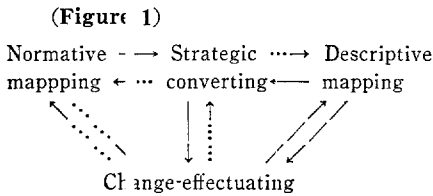
(8) In this sense, policy can be defined as an agent of change. For this concept of policy, see Erich Jantsch, "Form Forecasting and Planning to Policy Sciences," *Policy Sciences*, Vol. 1, No. 1 (Spring 1970), p. 32.

(9) For a similar view, see Hasan Ozbekhan, "Toward a General Theory of Planning," in Erich Jantsch (ed.), *Perspectives of Planning*, OECD, Paris, 1969, p. 153. And, cf. C. West Churchman, *The Systems Approach*, Dell Publishing Co., New York, 1968, especially pp. 146-176.

action-programming/implementing plans/  
changing environment); and

- (4) descriptive mapping (defining the reality  
of the environment).

It should be noted again that these four levels  
of relations are incorporated into an integrated  
process by a contextual orientation. This may be  
diagrammed as follows:



\*Dotted arrow indicates indirect influence.

Through this integrated process, an informa-  
tion system brings together the planning functions  
and thereby their effectively matched information  
into planning. In other words, planning is always  
at work in an information system to generate,  
store, mobilize or organize, and consume infor-  
mation toward the best possible environment-  
changing actions.

To fuse planning functions into some dynamic  
interactions constituting an integrated process,  
an information system requires at least two con-  
textuating processes: (1) the value-optimizing  
process; and (2) the fact-enlarging process.<sup>(10)</sup>  
The value-optimizing process is primarily con-  
cerned with structuring value relations, conveying  
some value contents to knowledge and enlarging  
the value contents throughout the information  
system. But this process is also concerned with  
limiting or confining facts and knowledge within  
the framework of the values. On the other hand,  
the fact-enlarging process is concerned with  
intensifying intellectual or logical relationship  
among facts, organizing interrelated facts into  
knowledge, and testing the congruence of beliefs

and values with facts in terms of knowledge. But  
this contextualizing process is also concerned with  
reducing the implications of values on the con-  
tents of the information system.

However, emphasis on the planning side in the  
concept of information system requires the em-  
ployment of a lead-time concept, since actual plan-  
ning is always concerned with the actions to be  
implemented some time in the future. The con-  
cept of lead-time needs at least two additional  
contextuating processes: (3) the value-reinforcing  
process; and (4) the fact-forecasting process.<sup>(11)</sup>  
The former is concerned with intensifying some  
specific contents of value at a certain point of  
time in the future, which is a specific lead-time.  
The latter is concerned with bringing into plan-  
ning some statements about future affairs, as are  
expected to occur at a given point of coming  
time.

To summarize, planning can be defined, from  
the informational perspective, as *the structuring  
of a contextual orientation for the purpose of  
making future-environment-creative policies*. That  
is, planning is the human-social activity that at-  
tempts to elaborate, develop and utilize some cri-  
teria for selecting information and some mechan-  
ism for governing the relationship between infor-  
mation, as effectively matched by planning func-  
tions, and the environment.

## 2. Behavioral Constraints upon Planning

The concept of planning as the structuring of  
contextual orientation is more logical or ideal  
than real or practical in the sense that no perfect  
planning is possible in the realm of social action,  
which is characterized by the dynamics of power  
and conflict and limitations of resources, infor-  
mation, rationality of planners, social homogeneity

(10) Bom H., *op. cit.*, pp. 37-42.

(11) *Ibid.*, pp. 57 and 81-82.

and administrative capability.<sup>(12)</sup> To be applicable to the human-social system, planning should be coupled with a strategy for being realistically applied to the environment.<sup>(13)</sup> The first step to meet this need may be to find and more properly handle upon the planning system which inhere in the systems's characteristics. This section is concerned with clarifying such constraints and their implications on our concept of planning.

The proposed concept of planning is characterized by the general introduction of its cybernetic or normative thinking and systems perspectives.<sup>(14)</sup> In systems perspectives, particularly those associated with normative orientation, there are two dangerous traps to avoid at the model-building stage. The first trap lies, as Jay W. Forrester points out,<sup>(15)</sup> in the failure to recognize that a planning system works within and interacts with the human-social system, rather than acting upon an unresponsive object. And the second trap is, as Jean A. Millar indicates,<sup>(16)</sup> in the failure to understand that all human-social systems, including the planning system itself, consist of human beings and human organizations. Therefore, the behavioral characteristics of the human-social system and the bounded rationality of human beings and organizations can be taken as the major sources of behavioral constraints imposed upon the planning system.

At this point, it is also important to indicate

that the two primary sources of the system's behavioral constraints are in mutual, rather than contradictory, relations. They are mutual because the planning system is also a human-social system and all human-social systems are made with human beings and organizations.

As Jay W. Forrester rightly describes, the human-social system is a "complex system," which refers to a high-order (the order of a system is equal to the number of states necessary to describe the condition of the system), multiple-loop, non-linear (output is not proportional to input), and feedback structure.<sup>(17)</sup> This fundamental nature of a complex system affects the behavioral characteristics of planning. Forrester goes on to present its important behavioral characteristics which must be understood properly if it is expected that planning will lead to systems of better behavior. They are: (a) a complex system is counter-intuitive; (b) it is remarkably insensitive to change in many system parameters; (c) it counteracts redirections in policy; (d) it is highly sensitive to a few parameters and to some specific changes in structure; (e) it often contains a delicate balance between the forces of growth and decline; and (f) showing quite opposite directions of response in the short run from those in the long run, it tends towards minimum performance and the least desirable behavior.<sup>(18)</sup>

These behavioral characteristics of human-

(12) According to Zygmund Bauman, these factors are functional requisites for "perfect planning." See "The Limitations of Perfect Planning," in Bertram M. Gross (ed.), *Action under Planning: The Guidance of Economic Development*, McGraw-Hill, New York, 1967, pp. 109-114.

(13) John Friedmann, "Notes on Societal Action," *Journal of the American Institute of Planners*, Vol. X (XV, No. 5 (September, 1969), pp. 311-318. To make planning fused with implementation, he proposes the "action-planning model," in which planning and action are conceived as a single operation.

(14) For the detail, see Bom Hu, *op. cit.*, Ch. 2, especially pp. 44-46.

(15) Jay W. Forrester, "Planning under the Dynamic Influences of Complex Social Systems," in E. J. Jantsch (ed.), *op. cit.*, p. 237.

(16) Jean A. Millar, "Selective Adaptation," *Policy Sciences*, Vol. 3, No. 2 (July, 1972), pp. 125-135.

(17) Jay W. Forrester, *op. cit.*, pp. 238-240.

(18) *Id. d.*, pp. 240-242.

social systems affect and are affected by some basic weaknesses of human beings and their organizations which are inherent in their purposeful behavior. For this reason, it is not enough to discuss on behavioral problems of the systems only from the system's perspectives. As Jean A. Millar holds, it "masks the fact that those systems consist of human beings and human organizations" and detracts attention from more fundamental problems."<sup>(19)</sup>

No one will dispute the fact that there are in human capacity some more fundamental limitations to be recognized as irreplaceable or semi-permanent human elements, like human beings' being subject to the basic physiological needs of hunger and thirst and the maintenance of homeostatic mechanisms of body. Examples of such human limitations are:<sup>(20)</sup>

(1) limited ability for self-guidance (inability to clarify the objectively most desirable value as

the ultimate supreme goal/inability to avoid value-conflicts/inability to translate values into action/difficulty in obtaining a change in values;<sup>(21)</sup>

(2) cognitive limitations in time (limited ability to forecast/difficulty in changing time orientations<sup>(22)</sup>);

(3) limited scanning of information (inability to handle open-ended information transactions/limited ability to measure the socio-psychological aspects of society/difficulty in changing the established threshold in the amount of information which can be digested and assimilated<sup>(23)</sup>/limited ability to process and use information);

(4) limited ability to control feasibility (inability to overcome lack of resources/limited ability to handle technological development<sup>(24)</sup>/limited ability to free from needs for bargaining<sup>(25)</sup>/limited ability to overcome time pressure); and

(5) limited ability to overcome resistances against change.<sup>(26)</sup>

(19) Jean A. Millar, *op. cit.*, pp. 129 and 125.

(20) Here, focus will be on human limitations identified at the level of societal planning, rather than personal planning. For human limitations in personal planning, see George A. Millar and others, *op. cit.*, pp. 117-123.

(21) Donald N. Michael, *The Unprepared Society: Planning for a Precarious Future*, Basic Books, New York, 1968, pp. 92-105.

(22) The term "time orientation" is borrowed from Hahn-Been Lee. He defines it as "a general guideline of an action arising time perspective and attitude toward time." For the definition and application of time orientation to the study of public administration, see *Korea: Time, Change and Administration*, East-West Center Press, Honolulu, Hawaii, 1968.

(23) Herbert A. Simon, *Models of Man*, Wiley, New York, 1957.

(24) Robert U. Ayres, *Technological Forecasting and Long-Range Planning*, McGraw-Hill, New York, 1969, pp. 18-28. He holds that in technological forecasting, there are some pitfalls due to the special characteristics of invention and innovation as social process. He categorizes them into: (1) lack of imagination and/or "nerve"; (2) overcompensation; (3) failure to anticipate converging developments; (4) concentration on specific configurations; (5) incorrect calculation; and (6) intrinsic uncertainties and historical accidents. From different angle Erich Jantsch points out that there are inadequate applications of normative thinking to the guidance of technological development. For the detail, see *Technological Forecasting in Perspective*, OECD, Paris, 1967.

(25) Herbert A. Simon, *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*, Wiley, New York, 1957; and James G. March and Herbert A. Simon, *Organizations*, Wiley, New York, 1958. See also Robert A. Dahl and Charles E. Lindblom, *Politics, Economics, and Welfare*, Harper & Row, New York, 1953.

(26) Goodwill Watson, "Resistance to Change," in Warren G. Bennis, Kenneth D. Benne and Robert Chin (ed.), *The Planning of Change* (2nd edition), Holt, Rinehart & Winston, New York, 1969, pp. 488-498.

A variety of combinations of the two categories of behavioral characteristics imposes such semi-permanently irremovable constraints upon planners that they tend to develop semi-permanent behaviors for making planning adaptive to the fundamental constraints. Examples of such adaptive behaviors, upon which remarkable studies have been done are: (a) sequential attention to goals and sub-goals;<sup>(27)</sup> (b) disjointed incrementalism;<sup>(28)</sup> (c) serial and remedy-oriented decision-making;<sup>(29)</sup> (d) decision-making through mutual adjustment;<sup>(30)</sup> (e) using secondary criteria for the optimal model (instead of the net output of policy-making);<sup>(31)</sup> (f) repetitive planning (plans are usually made by arranging old plans in a slightly new way);<sup>(32)</sup> (g) using an emotional basis for rational action (developing strategies to arouse emotions for mobilizing energy);<sup>(33)</sup> (h) interpreting the reality through an appreciative system;<sup>(34)</sup> (i) satisfying behavior (searching for acceptable levels of solution rather than the optimal one);<sup>(35)</sup> and (j) mixed scanning.<sup>(36)</sup>

Such adaptive behaviors always include trial and error. For this reason, they turn out to be imperfect in an actual planning process and, once developed, become constraints to normative planning. Therefore, bounded rationality of a planning

system is a function of various combinations of all the behavioral constraints that stem from the fundamental characteristics of human beings themselves and the human social system and from their adaptive behaviors. Bounded rationality as seen in such a way is inherently an essential element of a planning system.

### 3. The Adaptive Planning System as a Constraint

In developing a normative and systems model for planning, there is always a failure to properly take into account bounded rationality as fundamental limitation of a planning system.<sup>(37)</sup> Ambitious attempts to overcome bounded rationality by intensifying normative orientation in a planning model turn out, when applied in an actual planning process, to be in vain, rigidified into utopian ideologies, or to be at best one step backward, being compromised with behavioral rationality. To make planning both normative and adaptive to bounded rationality, as Jean A. Millar vigorously urges,<sup>(38)</sup> we need to test, redefine and use it for planning models. Let us look into what implications bounded rationality has upon the proposed concept of planning as an information system.

(1) Bounded rationality hampers the openness

(27) Richard M. Cyert and James G. March, *A Behavioral Theory of the Firm*, Prentice-Hall, Englewood Cliffs, NJ, 1963.

(28) David Braybrooke and Charles E. Lindblom, *A Strategy of Decision: Policy Evaluation as a Social Process*, The Free Press, New York, 1963.

(29) *Loc. cit.*,

(30) Charles E. Lindblom, *The Intelligence of Democracy: Decision-Making through Mutual Adjustment*, The Free Press, New York, 1965.

(31) Yehzekel Dror, *Public Policymaking Reexamined*, Chandler, San Francisco, 1968.

(32) Aaron Wildavsky, *The Politics of the Budgetary Process*, Little, Brown & Co., Boston, Mass., 1964.

(33) Ertram M. Gross, "Management Strategy for Economic and Social Development," *Policy Sciences*, Vol. 3, No. 1 (March, 1972), pp. 1-25.

(34) Sir Geoffrey Vickers, *The Art of Judgement: A Study of Policy-making*, Basic Books, New York, 1965.

(35) James G. March and Herbert A. Simon, *op. cit.*,

(36) Amitai Etzioni, *The Active Society*, The Free Press, New York, 1968, Ch. 12.

(37) Jean A. Millar, *op. cit.*, p. 125.

(38) *Ibid.*, pp. 125-125.

of an information system, restricting the interactions between the system and the environment, both spatially, to less open relations. In adapting itself to bounded rationality, the information system becomes more closed, the boundary between it and the environment more rigidified. Thereby, its boundary activities become more unresponsive to the requirements of its environment, and feedback in it are less flexible, creative or adaptive. In consequence, the major impetus tends to shift from boundary-crossing activities at the normative mapping level to predetermined or routinized activities at the level of strategic converting or change-effectuating, that is to say, within the system's boundary.

(2) Bounded rationality impairs an information system in its self-regulating and self-adaptive capacity. It becomes less effective in selecting values, inventing objectives and defining goals. Because of this, goals or objectives are given as the initial kicks<sup>(39)</sup> from outside of the system. Without any deliberate effort being made to encourage boundary-crossing activities, the "initial kick" would determine the contents of the resulting plans.<sup>(40)</sup>

(3) Bounded rationality fosters clear differentiation of functions rigidified boundaries between sub-systems, fixed arrangements, and routinization. For this reason, there would be set boundaries between sub-systems, at least a boundary between

the information function and the plan-making function, which tend to be rigidified through routinization of their relationship. This is why information is usually intaken as a bit, not as a context, into the plan-making process,<sup>(41)</sup> from which the information process is separate.

(4) Bounded rationality affects the manner in which an information system reduces entropy. It makes the system more dependent upon routinization, the maintenance of equilibrium, and functional differentiation of sub-systems, in order to reduce entropy, than upon the regulator of "steady-state dynamics"<sup>(42)</sup> through goal-diversification activities in the interactions of the system with its environment. Therefore, the system tends to be less dynamic, flexible and creative.

Practical adaptation of planning to bounded rationality results in an adaptive planning system. This system is goal-rigidifying rather than goal-diversifying. It is more likely to concentrate and consume energy and normative standards, whose major sources are informational contexts, than it is to generate and store them. It acts under the guidance of behavioral principles rather than normative thinkings. In terms of the proposed concept of planning as the structuring of a contextual orientation, therefore, adaptive planning naturally appears to be somewhat undesirable. But also it turns out to be a constraint to the proposal concept of planning, because it tends

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(39) The "initial kick" is defined here as the first happening, deliberate or accident, in a process of mutual causal relationship that amplify the initial condition of a system.

(40) The importance of such effort is due to the misunderstanding of the initial kick. As Magoroh Maruyama points out, "a sacred law of causality" in the classical philosophy stated that similar conditions produce similar effects and therefore dissimilar results are attributed to dissimilar conditions. He goes on to hold properly that this law of causality should be revised to state that similar conditions may result in dissimilar products. For the detail, see "The second Cybernetics: Deviation-amplifying Mutual Causal Processes," in Walter Buckley (ed.), *op. cit.*, pp. 303-313.

(41) For the practical and methodological pitfalls of the concept of information-bit, see Bom Hu, *op. cit.*, pp. 28-31.

(42) For steady-state dynamics, see Hasan Ozbekhan, *op. cit.*, pp. 105-119. See also Bom Hu, "國家開發政策の 人本主義的 意義(Human Meanings of National Development Policy)," 崇田(*Chong Jun*) (Socong Jun University), No. 17 (1974), pp. 41-50.

toward confining itself within its own boundary, rigidifying the boundary and thereby hampering activeness and openness of planning.<sup>(43)</sup>

The view in which an adaptive planning system is regarded as a constraint upon more normative model of planning is very significant in the senses:

(a) that it implies that the adaptive planning system should not be simply treated as acceptable or satisfying and therefore more efforts should be made to improve planning;

(b) that the information system and the adaptive planning system can be differentiated at least for the purpose of more careful analysis in an attempt to integrate them into a better and more realistically workable concept of planning; and

(c) that the relationship between the two system can be used as the conceptual basis for such efforts.

#### 4. Planning as a Selective Structuring of Contextual Orientation

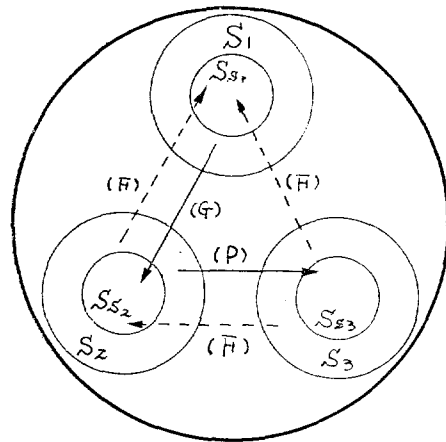
As seen from the foregoing discussion, bounded rationality always undermines normative thinking and systems perspectives in developing a planning system. But it does so in varying degrees. Almost any attempt, not to overcome, but to reduce bounded rationality as much as possible, will enhance the planning system. This can be achieved by making the planning system adaptive to the fundamental constraints through intensifying normative thinking and systems perspectives in model-building. This section is an attempt to clarify the relationship between the information

system, as defined as planning, and the adaptive planning system, which is but a part of the former.

The relationship of the adaptive planning system to the information system may be more easily explained in the following figures 2 and 3, which show the ways in which the system elements of planning stand in relation to one another, both in the traditional concept of planning and in the proposed one.<sup>(44)</sup>

(Figure 2)

#### Traditional Concept of Planning



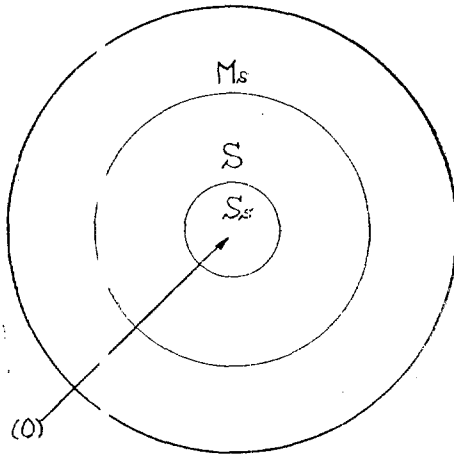
- Ms = meta-system: human-social environment
- S<sub>1</sub> = system: goal-defining
- Ss<sub>1</sub> = sub-system of goal-defining system: information
- (G) = goal-giving direction
- S<sub>2</sub> = system: planning
- Ss<sub>2</sub> = sub-system of planning system: information
- (P) = plan-giving direction
- S<sub>3</sub> = system: implementation
- Ss<sub>3</sub> = sub-system of implementation system: information
- (F) = action-amplifying feedback flow

(43) Another important, though indirect, factor that encourages this tendency is objective of planning. For the detail, See Bom Hu, "A Social Information System for National Development Planning of a Developing Country: Korea" *op. cit.*, pp. 65-66.

(44) The traditional concept of planning is defined here as "the mechanistic model," which Hasan Ozbekhan employs in comparison with "the human actional model." For the general characteristics of the two model, see Hason Ozbekhan, *op. cit.*, p. 118; and Bom Hu, "Policy Sciences Perspectives of National Development" 韓國行政學報 (*Korean Public Administration Review*), No. 8 1974), pp. 97-116.



(Figure 3) Informational Concept of Planning



- Ms = meta system: human-social environment
- S = system: information imbedding adaptive planning
- Ss = sub-system: adaptive planning embedded into information system
- (O) = major flow of objective

From the foregoing discussion and the above diagrams, it becomes clear that adaptive planning is similar to the traditional concept of planning in its orientation, function and relationship between system elements. In short, the adaptive planning system has a rather closed and rigid-

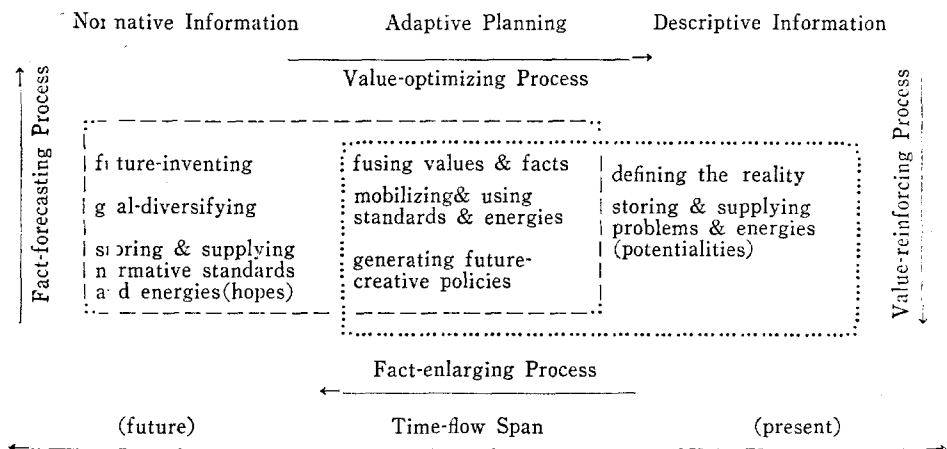
fied boundary.

In this study, this fact is acknowledged, and planning, for the purpose of convenience, divided into an information system, which contains two sub-systems (normative information and descriptive information), and an adaptive planning system. The former should be designed so as to complement the weakness of the latter by encouraging the normative orientation and systems perspectives of planning. In this sense, the relationship of the two systems is strategic.

At the same time, planning is, in its functional process, regarded as an integrative information process embedding adaptive planning. Such a view is not only possible but also acceptable as long as planning can be defined as the structuring of a contextual orientation for the purpose of making future-creative policies, because the contextual orientation makes possible an integrated process of cognitive, affective and normative functions of information. To summarize, the functional relationship between an information system and an adaptive planning system may be diagrammed as in the Figure 4.

It must not be misunderstood that bounded rationality and planning objective as the "initial kick" impose some restrictions upon the process of structuring a contextual orientation. The res-

(Figure 4) The Functional Structure of Information System as Planning



trictions affect both structure and content of the contextual orientation, which causes a planning system to emphasize some particular aspects of an information system rather than others. As a consequence, they affect the scope, both spatial and temporal, of information system in the planning process.

For the reasons outlined in the preceding discussion, the structuring of a contextual orientation is inevitably *selective* in an actual planning process.<sup>(45)</sup> The meaning of "selective" is this context should be discovered from the realistically better responses with regard to the restrictions imposed by bounded rationality and planning objective.

## 5. Conclusion

From the foregoing discussion, it becomes clear

that the informational concept of planning this study proposes is quite different from the prevailing concepts of planning. The proposed concept of planning has its own distinguishable characteristics, which are inherently same as those of Hasan Ozbekhan's "human-action model." It provides a new conceptual basis for integrating a comprehensive set of information, which includes both normative and descriptive contexts, and planning functions into an integrated approach to planning.<sup>(46)</sup> In addition, it provides a practical basis for developing better computer soft wares for planning.<sup>(47)</sup> In short, the proposed informational concept of planning will be able to facilitate the fuller insurance of policy sciences perspectives<sup>(48)</sup> for planning.

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(45) Zygmunt Bauman properly points out that there is in systems perspective the danger of over-emphasis on the "wholesomeness" of the systemic structure and function, in addition to the innate pro-stability and anti-flexibility bias of organic analogy. For the detail, see "Uses of Information: When Social Information Becomes Desired," *The Annals of the AAPSS*, Vol. 393 (January, 1971), pp. 20-31.

(46) For an example for such an approach, see Bom Hu, "A Social Information System for National Development Planning of a Developing Country: Korea", *op. cit.*, Chs. 4 and 5.

(47) Bom Hu, "정책학의 관점에서 본 정책형성을 위한 Computer의 활용(The Utilization of Computer for Policymaking in the Policy Sciences)," *행정과 EDP (Public Administration and EDP)*, Vol. 2, No. 4 (December, 1974), pp.23-33

(48) For major perspectives of the policy sciences, see *loc. cit.*; and Bom Hu, "Policy Sciences: Perspectives of National Development," *op. cit.*