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A Theoretical Basis for Participatory Planning

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ABSTRACT

Arguments are presented for the reconsideration of models which guide planning behavior and structure planning organizations. Hierarchical organizations are contrasted with reticular organizations and the latter are presented as necessary for effective citizen participation. Legitimacy is presented as a fundamental basis of justifying planning action and historical shifts in forms of legitimacy are noted. Participation, as a form of legitimacy, and several aspects of participatory planning are discussed in terms of recent systems thinking. It is argued that participatory planning increases the effectiveness and adaptivity of the planning process and contributes adaptivity and stability to the societal system. Further, it is argued that citizen participation is an essential element in making the planning process a learning system. This leads to a strengthening of the definition and role of communities in the urban system, and to an unexpected requirement of planners who would adopt a participatory planning process.

I. Hierarchical and Reticular Models of Planning

A recent U.S. Department of Transportation publication summarized the proceedings of a series of American Institute of Planners' sponsored seminars where a fairly current regard for participatory planning was expressed [1]. Parties to the conference were professional planners, public administrators and citizens. Although some notions of the rationality of participation were evidenced, the basic position was still that citizens should be given no power other than the democratic power they already possess; that planning needs to be selective on who it should include; and that participation is valuable because it minimizes confrontation and facilitates the implementation of planning proposals.

But citizen participation still remains outside of the conventional planning process—invited in occasionally by the professional planner or public administrator, or forcing its way in occasionally. The conventional planning process is not structured to allow the natural, positive inclusion of citizen input. What is needed is a theoretical

reorientation away from the conventional hierarchical decision-making models[1] toward a *reticular* structure which allows the continuous inclusion of substantive citizen input.

Several years ago architects and urban planners were oriented toward hierarchical spatial-structural organization in their conceptualization of the city. They were admonished that "the city is not a tree" (Alexander, 1966) and began reconceptualizing the city as a *reticular* organization [2]. Similarly planners generally conceptualize the planning process as essentially hierarchical, perhaps because early models of planning were centralized and comprehensive.

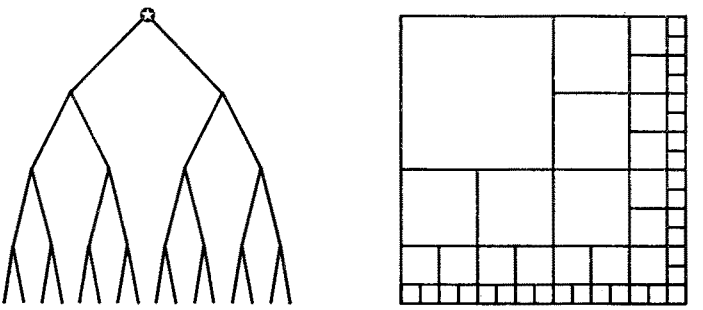

Fig. 1. Organizational Forms.

It will be argued in this paper that we need participatory input to plan and manage complex environments; that participatory inputs are incompatible with hierarchical planning processes; that participatory planning requires *reticular* planning-decision structures. Hopefully the acceptance of a *reticular* conceptualization of the planning process will eliminate some of the professional and bureaucratic fear and difficulty of including citizens in the planning and managing of the environment. In any event this is not a new call to theoretical reformation but may be seen in an historical context of forms of legitimacy and their shift in emphasis over time.

II. Forms of Legitimacy

Since planning includes a selective and willful constraining of present and future societal processes, the initial question any planning activity must answer is—how is it justified?[2] Bringing societal processes under conscious control or giving them purposeful guidance involves intervention in processes that are otherwise regarded as self-

[1] *Hierarchy*, as used in this paper, will refer to a system where the elements of organization are permitted only *asymmetrical* relationships; i.e. relationships to subordinate elements or to *a* superior element. Once a hierarchy begins to include symmetrical relationships, i.e. between elements of the same rank, it begins to become reticular. (Reticular meaning net-like, grid, etc.) A multilevel *reticular* structure is one where the elements are permitted to have both *asymmetrical and symmetrical* relationships at each level. (See Lindblom, 1965, pp. 26–27; Etzioni, 1968, pp. 45–46.)

[2] The concern with legitimacy in this paper is due to the explication of its relevance in Martin Rein's paper, "Social Planning: The Search for Legitimacy" (*JAIP*, July 1969); and Walter Buckley's book *Sociology and Modern Systems Theory*.

contained or determined from within. This intervention may be normative—involving the quality of a future state or transient relationships; practical—involving the co-adaptation of two or more domains to a process which furthers the attainment of mutually desired ends; or coercive—involving the external application of constraints within a domain. While any planning act may involve all three, each requires a particular form of justification except, perhaps, the coercive aspect which, because it is coercive, may require no justification.

There has been a gradual shift in the mode of justifying planning action: from rational—the most efficient means to unquestioned ends, to consensual—the endorsement and support of vested interest groups, to participatory—a new regard for the "user."

While advocacy planning was basically unheard of thirty years ago, the enshrinement of technical rationality is to be found nowhere today. The shift in legitimacy may be causally related to broader changes in modes of thinking and social process paradigms. In general, the impact of probability and value contingent knowledge on the rational model was to push it toward consensuality, and the impact of democratic process on consensuality was to push it toward a broader inclusion of participation. But the concern here is with *forms of legitimacy as these become models to guide and justify planning action.*

A. The Legitimacy of Rationality

Defining the ends a planning process is to serve, identifying or inventing means of achieving them, evaluating the means, selecting an optimum or satisfactory means, and implementing it are the elements of the rational process. Conventionally, the rational process in the urban planning context does not include the definition of ends to be served nor does it include actions to implement the selected means. These exclusions reduce the rational process to technical rationality which, as a system of thought, has been thoroughly criticized over the last decade by writers including Simon, Lindblom, Bower, Altshuler, Davidoff, and Rein.

The validity of technical rationality is dependent on certainty and the perfect predictability of the future. While it is perhaps too dramatic to argue that the uncertainty principle alone destroys the basis of validity for rational planning, it produces problems of major proportions. Mesarovic states that in complex systems, such as society or a planning domain, the structural behavior of the system cannot be determined from outside the system [3]. The result is that the determination of the structure of the system being planned for is contingent on one's position relative to the system.

Also, true to Heisenberg, the simple change from the system being unknown to its being known may influence changes in the system. While human knowledge of molecular structure does not change molecular behavior, human knowledge of human behavior is likely to change human behavior—making it again unknown.

A further reduction in the absoluteness and deterministic aspect of rational planning eventuated when social science recognized that "facts" are value laden by virtue of their selection and appreciation. The synthesis of facts and values comprise what Vickers terms an appreciative system. Here "each view selects its own relevant facts in relation to its own relevant values." Further, "the appreciated world is both a

composite and an inexhaustible world. It is composite because it is composed of views seen from different viewpoints which cannot be simply added together. It is inexhaustible because these viewpoints may change and multiply without any obvious limit." [4]

Viewpoints cannot be added together to the extent that they are mutually exclusive. An appreciative system is built by ignoring or excluding information that is deemed irrelevant—i.e. does not fit the cognitive pattern that holds the selected (relevant) information. Being mutually exclusive, different systems cannot be simply added together but require synthesis if they are to be unified.

Ten years ago Davidoff and Reiner (1962) in their *Choice Theory of Planning* argued that the planning process is permeated by values. While the integration of values in the planning process does not preclude rationality, it does expose the process to consensuality. That is, "objective factuality" becomes subject to verification from the viewpoints of the various affected interests.

Because rational planning is a goal-oriented process it tends to ignore the inherent value of the process itself. This has led to a fixation on the anticipated artifacts at the end of the process—master plans, programs, etc.—rather than the continual process of managing change. The existing environment is frequently assessed as being characterized by great uncertainty or unpredictability. Planners' response to this is that long-range planning is inappropriate in this context. Rightly so—the optimal strategy in a stochastic environment according to Schutzenberger is "the simple tactic of attempting to do one's best on a purely local basis." [5] But the implication is more fundamental than only shortening the time frame of the planning process. The structure of rational planning as an end-oriented process becomes questionable. A stochastic environment requires a continual orientation to existential reality and necessarily includes a continual redefinition of ends. Also the process is adversely affected by the rapid obsolescence of information used in determining appropriate means to desired ends, and even in determining the desirability of ends.

In conclusion, rational planning can claim legitimacy only if it includes new elements in its process. And, perhaps these inclusions will allow rationality to be cast in a planning context, as a learning system.

B. The Legitimacy of Consensus

Consensual planning results from a recognition that rational planning has political consequences. Two functions of consensus are: to identify mutually appreciated factual arrays which form a basis for decisionmaking that mutually affects different groups or different societal levels; to promote an equitable distribution of resources which are increasingly controlled by bureaucracies. Support generally takes the form of agreement not to resist implementation if a plan recognizes or furthers the ends of the affected groups. Or in the case of public agencies, endorsement is sought. Consensual planning in some cases accommodates situations in which agencies have formal and informal postures that may be contradictory.

The conclusion one may draw from the recognition that planning is a value-permeated process is that planning must also be consensus-permeated. While consensus is conventionally regarded as necessary in the formation of goal structures and

criteria for evaluation routines, it can now be seen that consensus is also necessary on what kinds of information are relevant to the planning process.

The kinds of information deemed relevant to a planning process are largely a function of the experiences and issues central to the people involved in the process. The legitimacy of consensual planning depends on bringing a broad range of people into the process representing a variety of interests and sources of power. These may include influential leaders, organizational interests and government. The greater the diversity of representation the greater the claim for legitimacy, since it implies that a greater proportion of society is represented. But the greater the diversity of representation the more evident it will be that no single issue is central or that no single solution will be sufficient.

Consensual planning raises the question of whether there is, or can be, a singular public interest. Bower argues that there cannot be, as society and other large organizations are inherently unable to function on a unidimensional value system throughout the organization [6]. Vickers and Davidoff argue that there is no singular public interest but a multitude of often conflicting interests [7].

While involving conflicting interest groups in the planning process enhances its legitimacy, it may reduce its adaptiveness. Rein argues that involvement impedes innovation; that innovation and change will be forsaken in favor of maintaining a consensus on which divergent interests can agree. Energy is directed toward preserving the coalition rather than toward adapting to new conditions or promoting changes in the community [8].

The expansion of the scope of concern of planning processes is matched by an expansion of bureaucratic control or regulation of the environment and its existing and potential resources. This is not limited to natural resources. Increasingly, to work one must be employed because the tools and equipment needed for work are increasingly only available in public and private bureaucracies. To some extent expertise moderates this dependency as the resource is inherent to the individual, but the opportunities for employment are perhaps even more organization-bound due to the specialization usually associated with expertise. The allocation of resources and opportunities at the increasingly regulated scale requires increased consensus on their distribution and regulation.

The claim that citizens should participate in decisionmaking only through their elected officials will be discussed later. Here we should simply ask, To what degree are the resources and opportunities actually controlled by elected officials and to what degree by bureaucracies not directly accountable to the public?

C. The Legitimacy of Participation

As there is a move toward equitable distribution of resources and opportunities there is a move toward a broader consensus on the control and distribution processes. This ultimately leads to the "user," or citizen, and can take the form of participatory planning. Only in the special case should participatory planning refer to the inclusion of only disadvantaged classes of citizens. In general, participatory planning should refer to the involvement of any individual, group or community. The rationale for this broad inclusion will be developed in a further section of this paper.

The concept of development as it applies to social systems involves increasing differentiations and integrations, or increasing specialization and coordination [9]. As Mannheim puts it, "All progress in technique is bound up with additional social organization." He further regards technological specialization as a means of making man more independent of nature but more subject to the "coercion that cooperation entails." [10] The focus here is on the coercive aspect of cooperation. At the societal level consensus moderates coercion, but at the personal level moderation can be achieved only by participation in the coordinative integration of individual specializations.

Bureaucratic control over resources and opportunities is functionally equivalent to coordination—be it good or bad. Since increasing specialization has a systemic relationship to the coordinative function, it has a systemic relationship to bureaucratic control in the present societal context. But as the bureaucratic domain of regulation extends its boundaries to include control over the existential needs of the individual, so the individual is increasingly urged (perhaps from within) to exert guidance on bureaucracies. Participation in a complex social system is necessary to develop and *maintain* a sense of identity by experiencing oneself as potent and directed.

The fundamental legitimacy of participatory planning is based on plans and programs being endorsed, supported, and *created* by the recipients. Generally the concern has been with participation by disadvantaged classes of recipients. Democracy, mobilizing interest groups as well as searching for consensus, has provided disadvantaged groups with more powerful instruments for articulating their demands and preferences. As Rein stated: "It helps them to organize protests in which their moral claim to justice and equal treatment can find expression." [11] This has provided advocacy planning with its reason for being.

However, advocacy reflects a rigid political structure and planning process, in which a planner acts as an advocate for excluded groups, organizing them to enter the planning process. In his "Advocacy and Pluralism in Planning" (*JAIP*, November 1965), Davidoff referred to planners pleading their cases to the public and balloting on comprehensive plans. But advocacy implies another, higher level planning process to judge contending plans and Rein argues that society has created neither methods of adjudication nor standards to judge conflicting social policies [12]. Further, the electorate might favor one plan by a slight majority, in which case a great number of people would have to live with a plan which they found disfavorable. Rather than an all-or-nothing strategy, what is needed is a planning process that structurally integrates citizen participation.

An inherent limitation of participatory planning is that planning decisions made in the present may eliminate options and constrain societal processes in the future; and participants tend to be biased toward or limited by the time frame in which they exist. There is pressure for immediate solutions to immediate problems often with a disregard for future consequences. More important perhaps is that future participants are excluded from a planning process in the present which leads to an environment they will have to live in. Also if Forrester is correct in stating that social systems are of a particular complexity which defies intuitive understanding, then the citizen participant will be limited in the comprehensiveness of his input [13].

Elements of rational and consensual planning should be integrated with participatory planning to overcome the participants' time frame bias and the nonrepresentation of future participants, and to provide a comprehensive basis for the planning process. The balanced integration of these elements may be the ultimate or primary responsibility and justification of the professional planner. The ultimate legitimacy of participatory planning would be that the unconstrained inclusion of citizens in the planning process leads to needed innovation and adaptiveness in urban planning and society as a whole.

III. Aspects of Participatory Planning

The integration of rational and consensual aspects of planning with personal and social aspects leads to a new notion of the planning process. For now this will be called participatory planning and its different aspects will be noted briefly here and in detail in the following sections.

The rational aspect of participatory planning is that because individuals and small groups are more intimately involved with environmental changes, they can, with great immediacy and accuracy, provide a planning process with information and judgments regarding local systems. Incorporating this function throughout the range of the planning domain provides the whole with the vitality and adaptiveness of the aggregate of local system vitality and adaptiveness.

The consensual aspect of participatory planning is comprised of the individual, or societal units, being involved in the determination of ends and means for the planning processes related to the domain of the individual, or societal unit. At the community level this may lead to a further integration of power with authority—a move toward a more democratic society. This aspect of participatory planning also enhances the emergence of value domains in the societal whole and promotes the definition of communities and the development of identity.

The personal and social aspect of participatory planning involves the development of competence, which leads to health in the individual and to health-promoting forces in the community of which he is a member. Competence is an integral and reciprocal element of participatory planning: It is a personal consequence of participation, and an effective participatory system depends on the competence of its members.

A. The Rational Aspect of Participatory Planning

Participation Enhances the Managing of Complex Environments

As noted earlier, development in a societal context involves increasing differentiations and integrations, increasing specialization and coordination. While coordination generally connotes centralized coordination, this can be seen as only a special case of coordinative behavior. Coordination can also be achieved by two or more elements in an organization without requiring the intervention of a hierarchically superior element. Increased centralized coordination is necessary in increasingly complex organic systems. But Dunn takes the position that centralized coordination in the societal system is not necessary because of the decisionmaking and creative capability of each person. And further, that an increase in coordination may take the form of

increased competence in each person [14]. Moreover, Manheim notes that democracy and stability in society may be dependent on an *even* distribution of rationality (policy and executive functions) among the individuals of society [15].

The decisionmaking function is not only reflected in terms of what ought to be done in a certain context, but also in decisions regarding the continued relevance of information. The disposal of obsolete information and the acceptance of new information is a function of what Etzioni terms "collective reality testing" by participants. Since complex environments are characterized by high rates of change, information is subject to rapid obsolescence. And since citizens are intimately involved with some parts of the environment, they must continually note—if not adapt to—changes occurring around them. In this case the citizens' input to the planning process can take the form of providing wholly new information categories or it can serve to update information already stored in the planning system.

In a planning context, the creative decisionmaking ability of participants and their evaluation of data for relevance or obsolescence can relieve the burden formerly on centralized planning to adequately prepare and evaluate all possible alternatives. Participation simply provides a broader basis and potentially more comprehensive framework for analysis and evaluation. Community members can quickly identify certain kinds of consequences implicit in the adoption of different alternatives. More important, community members can contribute to the generation of relevant alternatives, saving the planning process the energy devoted to the preparation and elimination of useless alternatives.

Participation Enhances the Adaptive Processes of Society

The present environment is increasingly typified by a level of complexity such that organizations cannot predict the consequences of their own acts. In this environment, termed a "turbulent field" by Trist and Emery, uncertainty arises because of the unpredictable interaction of complex organizations, and the instability of the field within which the organizations interact—e.g. market, urban environment, etc. [16].

The impact of an increasingly unpredictable environment on social behavior is to make predetermined behavior more vulnerable to obsolescence since behaviors are particular adaptations to particular environments. And since social systems frequently encounter situations where predetermined forms of adaptations are inappropriate, they are confronted with the necessity for social learning, or what Dunn terms "behavior directed at changing behavior." [17]

Holland proposes an unusual but useful way of looking at the environment as "a population of problems" confronted by a particular system [18]. A phenomenon cannot be construed as a problem by itself but only in relation to some purposive system. Further, a phenomenon may be a problem to one system but an insignificant or routine incident to another system. That is, complex systems are confronted with complex problems, simple systems with simple problems. Three classes of intrinsic relationships between systems and their connections to the environment—the problems—can be considered: One, that a system is related to a relatively stable environment and progressively "solves" its problems—i.e. progressively becomes adapted to the environment. Two, that the environment is changing such that new

problems emerge as rapidly as the system adapts to or solves the old problems—i.e. adaptivity remains constant in level but changes in configuration. Three, that the environment is changing at a rate such that the emergence of new problems is greater than the development of solutions to the older problems—i.e. adaptivity decreases in time to the point where the system becomes unstable, disintegrates and is reduced to simpler systems. The implication of Emery and Trist and the position of Vickers is that western society is currently on the verge of entering, or is in, an unstable relationship with its "population of problems."

Systems theorists commonly regard the societal system and other living systems as open systems because of their adaptive characteristics. The typical response of an open system to environmental intrusions, i.e. problems, is a change in the structure of the system to a more complex level. Thus the characteristics of stability and flexibility are not contradictory but supportive of each other and are inherent to the adaptive process of social systems.

The basic elements of the adaptive process in a societal context as identified by Buckley [19] include:

(1) A source for the continuous introduction of variety into the system's information and symbol bank—variety meaning deviance from the existing system norm.
(2) A *two-way* communication network extending throughout all parts of the system.
(3) A decisionmaking system that is sensitive to changes within the system and in the environment, and is capable of learning—i.e. allows changes in its goals and values.
(4) Effective subsystems for preserving and propagating those meanings, symbols, and information that have been demonstrated to be relevant—that have passed the "reality test."

Before discussing the function of the participant in the adaptivity of the societal system, it is important to consider the deviance aspect of variety intruding on the system. The role of feedback in a closed system is to counter deviance in the system—to promote the norm. When the system effectively promotes its norms it is described as being in equilibrium. But Buckley and others argue that neither closed systems nor equilibrium concepts are appropriate to societal systems [20]. The role of feedback in open systems is to promote disequilibrium in the system to enable it to change its norms in an *appropriate direction*, to make an appropriate structural change. The structural change is directed at reaching an equilibrium with the environmental intrusion—the system makes an adaptive response.

The first case is morphostatic—maintain system structure and equilibrium by *resisting* environmental intrusion. The second case is morphogenic—change system structure to achieve *local* equilibrium with environmental intrusions.

The function of participation in the adaptivity of the societal system is to enhance its morphogenic processes. Our conventional planning processes are equilibrium-oriented to the extent that they anticipate citizen compliance with, or support of, official goals and policies and to the extent that they resist intrusions in the form of citizen participation. This amounts to an attempt to maintain system equilibrium which has been argued to be inappropriate to the societal system. Conventional

planning resists adaptivity at a time when societal adaptivity is crucial to maintain societal stability.

Because of the numerous, diverse, and intimate contacts the citizen has with his environment, his participation in the planning and management of the environment is a source of needed variety. Given the opportunity (sometimes in spite of a lack of opportunity), the participant can exert pressure for change and can contribute to the definition of the direction change should take in terms of redefining system goals. In Buckley's terms the participant can contribute to the learning ability of the decision-making system by contributing to the reorientation of system-wide goals and norms.

Buckley has stated the need for the reality testing of information, symbols and meanings, and Etzioni has noted that collective reality testing is a function of the participants. This need and function become operational when the other system need—effective two-way communication throughout the system—becomes operational. Although conventional hierarchical system organizations may not inherently exclude two-way communication, they may hinder it as communication from subordinates is generally valued less than communication from superior units. This will be expanded in a further section of this paper where multilevel reticular organizations will be presented as more flexible and rapidly adapting than hierarchical organizations.

Finally, one could hypothesize that as societal systems become more globally integrated, the issues generated by intersystem coordination become less crucial than those by intrasystem coordination. This suggests a reduced importance of centralized coordination (the principal function of which is intersystem coordination) relative to coordination within the system. Consequently the lower levels of the system would play an increasingly important role in the adaptivity of the societal whole.

Participation Facilitates the Mutual Adjustment of the Individuals, Groups, Communities, Agencies, and Institutions Involved in the Planning Process

For Mesarovic, the essential characteristics of a hierarchy are: vertical arrangement of subsystems; priority of action or right of intervention of the higher level subsystems; dependence of the higher level subsystems on the actual performance of the lower levels [21]. Performance in a homeostatic sense means effectively executing the directives from centralized control. This is orientation inwards and is aimed at preserving internal equilibrium. In adaptive systems, which must be oriented outwards, performance cannot be measured only in terms of effective compliance with directives from centralized control but must also be measured in terms of adaptations to conditions outside of the system. This necessarily means that adaptivity originates in lower order subsystems, and that "directives" must also come from the lower units —those in contact with the environment. Also the system must reorganize itself to accommodate the adaptations of the lower units. The function of control, then, is to promote the readjustment of the entire system to accommodate the new adaptations of the lower units.

But the conventional means of coordinating a "decentralized" system is by establishing a single overall performance or utility function. The objective of the system is then to maximize the particular utility function. Maximizing a single utility function can easily be achieved by centralized control. But when the subsystems are regulated by

their own decisionmaking the question arises: Can centralized control functions and subsystems optimize the single utility function while pursuing their own interests? The implication is that single utility systems and centralized control are functional concomitants of hierarchical systems.

The coordinative function of a system has goals that differ from overall system goals, and selects its coordination parameters to promote the attainment of its own goals. For example, the selection of law and order as parameters promotes the goal of control in the regulative function of a system. If the relationship between the control subsystem and the overall system is consistent with the goals of the system as a whole, such a system might achieve its systemwide goals. But, as Mesarovic notes, generally no subsystem, including the control function, will be found pursuing the same goals as the systemwide goals [22].

Since the control function is only one of the system's subsystems, according to the principle of emergence, the control function goals cannot characterize or represent the systemwide goals. Emergence is the addition or removal of characteristics inherently accompanied by a transition from level to level in a system [23]. Accordingly, the centralized coordinative function in an adaptive planning process *cannot by itself set planning goals for the entire system.*

Centralized hierarchical control, since it responds only to adjustments within the system, is useful for homeostatic adjustments and cannot satisfy any other system goals [24]. We have seen that a societal system cannot be homeostatically or equilibrium-oriented while being adaptable and stable in an unpredictably changing environment.

While hierarchical control systems are appropriate to production processes, they are not appropriate to behavioral systems because the latter have more multiple purpose overlaps [25]. Further, Likert in his *The Human Organization: Its Management and Practice* argues that a social organization, in order to have effective coordination, must have a high level of cooperative behavior between superiors and subordinates, *and especially among peers.* An adaptive organization must have horizontal as well as vertical coordination [26]. In other words, the coordinative function in behavioral systems must have a *reticular* organization in order to be adaptive, stable and enduring.

In a multilevel reticular organization the organizational elements are linked in an interdependent input–output relationship so that each element functions in an operating environment formed by the rest. The elements exist in a co-adaptive relationship. And Dunn sees such a system overlaid with a managed superstructure which gives directive coordination to the elements [27]. The nature of coordination is to only condition, and not control, the goal-seeking activities of the elements or subsystems. Mesarovic finds it essential, for the effective functioning of a multilevel system, that the lower level decision units be given "some freedom of action to select their own decision variables; these variables might be, but are not necessarily, the ones the higher level unit would select." [28] This suggests that centralized planning, which cannot set systemwide goals, can condition the goal structure of local or short-term planning efforts. Perhaps the essential function of centralized planning is to synthesize the collective goal orientations of local planning efforts into systemwide goals.

The adaptivity of a system originates at the boundary of the system where the lower units are in contact with the environment. In order to maintain stability, the units at the boundary adapt not only to environmental change but to each other. At the same level in a system where there is overlapping function there should be overlapping control. In place of prescriptive coordination from higher order control units, Dunn suggests that the overlapping control can take the form of negotiated arrangements resolved through cooperative dialogue [29]. As this process spreads up from level to level the coordinative function attempts to maintain system stability as the system makes structural adjustments throughout.

Transformation processes are those in which biological systems are altered, or ideas and signals are modified; they change the form or set of physical, biological, or symbolic entities. Transfer processes perform the transfer of material, biological or informational entities which are essential to the exchange implied in joint or linked behavior. A behavioral system is formed by functionally linking two or more transformation processes by the intermediacy of one or more transfer processes [30].

In a social system a transformation process can be construed as an individual, a group, or a community, as all of these entities undergo transformations while they experience their environments. They in turn become change agents in the next level of the system—the group, community, or society, through the co-adaptive process. They become part of a multilevel system.

In a multilevel behavioral system, such as a participatory planning process, the essential transfer function linking co-adaptive subsystems is dialogue. In this context dialogue is characterized by Dunn as role exchange, conditional validity of the point of view of any party engaged, and empathy [31]. Dialogue provides the means of exchanging ideas, symbols, and information relevant to the planning process. To the extent that participatory planning requires a balanced flow of information—from the environment through all levels of subsystems rather than primarily from centralized control to lower units—dialogue and co-adaptivity will characterize the entire system.

B. The Consensual Aspect of Participatory Planning

Participation Promotes the Coextensiveness of Power With Authority

The conventional conceptualization of the community that planners are comfortable with is one which is based on territorial or geographical delimitations. While this conceptualization is perhaps appropriate to agrarian settlements, it is inappropriate to, and hinders the understanding of, the urban context we work in. The reasons simply stated are: Social systems, such as the aggregate of individuals, groups, and institutions denoted by the term community, depend on behavioral transactions for their boundary definitions. The differentiation of one community from another depends on distinguishing the type and intent of the transactions that form one system as opposed to those of another. Complex social systems cannot be identified or defined solely in terms of observable physical boundaries.

The implications of this notion of community to physical planning are significant. Since any one geographic entity—or "place"—is likely to be overlaid with a number of different behavioral systems, it will require a number of different value and functional dimensions. That is, a "place" may belong to more than one community

in the urban social system at different times or even simultaneously. Accordingly, an important geographic entity is likely to be found functioning as a multi-purpose system.

The non-physical properties of social systems on which the definition of community depends are the functional relationships of the system and the affective characteristics that form a coherent pattern. The entitivity[3] of a social system—e.g. community—depends on its being able to control its subsystems, rather than their being controlled from outside the system, and the subsystems must voluntarily participate in the system [32]. The subsystems referred to here are those functions which regulate, maintain or modify some part or aspect of the community environment, or implement the community's policies.

In a study of Los Angeles communities, Seeman, Bishop, and Grigsby found the affective requirements of a social system, e.g. community, to be that its members share a common fate, a common identity and common aims [33]. Common fate has a systemic equivalent: members of a community share a special relationship to the system at large. Common identity means that the nature of the relationship is mutually recognized and is understood by the members of the community. Common aims are those possibilities within the larger system that have become mutually appreciated goals. The systemic and affective are integrally related to the notion of community. Erikson regards the existence of community identity as being based on the self-regulation of its members coupled with their mutual recognition [34]. More specifically, a community is a behavioral system characterized by a uniform and special relationship of its members to the societal system, having consensual-based internal regulation, and a mutual recognition among the members of the behavioral system. The essential systemic requirements of community are therefore control and consensus.

Relevant to the essential systemic requirements of community—since they deal with the relationship between internal and external control—and consensus are the notions of power, authority, and legitimacy. In their Los Angeles study, Seeman, Bishop and Grigsby also found that the central issue of community is not value consensus but a sense of power, a condition of control, a willed fate. In other words, the central issue was found to be whether power was located within the community or whether the community experienced the external application of power regardless of the community's consent.

Since the terms power and authority are often not distinguished and used inconsistently, they will be used here with Buckley's distinctions. Power is the control of one entity by another to promote the latter's goals without or against the consent of the controlled entity. Authority is control of one entity by another with the consent of the controlled. Two considerations regarding authority are relevant here: (1) authority is central to the existence or destruction of a community; (2) the source of legitimacy will increasingly be within a community unless authority is to degenerate to power. The first consideration has been discussed and its important ramifications, particularly to the community, have been identified. The second consideration has important

[3] Entitivity, as used in this paper, refers to the qualities of boundedness, wholeness, and autonomy of an entity.

ramifications to the societal system in general. The degeneration of authority into power will be treated here as a consequence of the increase in consensus required in the community, or at the local level, as planning becomes more extensive and specific in its concern.

Participatory planning raises the question of authority because it requires a balance in the flow between coordinative directives from systemwide functions and the adaptive and co-adaptive directives which originate with the citizen or citizen groups. While a democratic government has a clear legitimacy of authority, a conventional planning process does not. The legitimacy of conventional planning is contingent on its being transferred from governmental functions. Schematically, the source of legitimacy in democratic government is at the bottom—consensus with the lower units, the citizens. When the legitimacy of planning is transferred from governmental functions, power flows downward from the source of its legitimacy which remains at the top. Thus conventional planning can only justify its acts in terms of the public interest mystique. This justification becomes meaningless to a community when planning proposals are advanced over the resistance of that community. Without the participation of the members of a community, the intervention of centralized planning in the community is a case of power and not authority.

Participation reverses the degeneration of authority into power but requires the same kind of consensual process as democratic government—from the bottom up. More specifically, if power is the ability to make changes, to pursue a special goal set, to define an entity, then authority—in view of the legitimacy that participation requires—becomes the consent of the domain to be changed, to have its goal-seeking activity conditioned, to be defined. Moreover, since the existence of community depends on self-regulation, the legitimacy of power and the promotion of authority depend on the community being able to make its own changes, define its own goals, define its own entitivity.

The essential element in participatory planning is to attach consent to the internal or external sources of power which affect a particular domain of the participant group. In this way power is legitimized and authority emerges from the local domain. Some instruments for this already exist. Rein suggests that atrophied urban political machinery can be revitalized or replaced by involving the citizens, thus creating a new center of authority in the community [35]. Or community building may mean external authorities recognizing legitimate community leaders, granting them power and making them *formally accountable* to the members of the community [36].

C. The Personal and Social Aspect of Participatory Planning

Participation Contributes to the Competence of Individuals and Communities and Promotes the Achievement of Personal, Community, and Societal Goals

A basic source of behavior—whether drive, motivation, or cause—is the desire to have an effect on the physical or social environment. R. W. White, and other developmental psychologists, regard this desire as fundamental to the psychological development of the individual and find the ability to produce a desired result—efficacy—as a major factor leading to competence. Competence, as the cumulative result of effective transactions with the environment, is health-promoting in the individual as it leads

to an eventual sense-of-competence, a consciously or unconsciously felt competence. The sense of competence is fundamentally based on making the environment provide what one desires, or on the successful assertion of one's desires with respect to others [37]. Effective transactions with the environment are necessary for health as they constitute a push toward growth, lead to self-esteem, and lead to adaptive behavior.

While participatory planning cannot provide effective transactions with the environment, it can provide the *opportunity* for them. It can provide the context in which a person can have an effect on his environment. In this way participation contributes to the health of the individual members of a community.

Since knowledge of the world, reality or environment depends on what one does in the environment, White asserts that "The objective stable world is best conceived as a construction based on action. Knowledge of the environment is knowledge of the probable consequences of action." [38] This implies that participation leads to individuals who are better able to select or identify viable courses of action, and to identify values that effectively guide community and societal processes. Participation is also likely to lead to more participation as it satisfies basic desires, leads to the development of the self, and builds effectiveness. Successful participation in a social system contributes to the recognition of oneself as potent and directed. This, as McWhinney notes, can only contribute to a personal sense of efficacy necessary for democracy in a society requiring deep interdependency among its citizens.

The continued existence of a healthy community depends on its being able to support and reinforce the health-giving processes in the community. Accordingly, full participation, as a health-giving process, can be made a goal within the community. This would contribute to the durability and vitality of the community and provides three systemic functions. One, it reinforces the entitivity of the community relative to its general societal context by establishing a goal-seeking activity within but independent of the societal context. Two, it specifically defines the entitivity of the community relative to its specific, or local context by the collective selection of those that should participate. Three, it initiates a coherent pattern of activity.

The initial act of participation is a change from a passive to an active position. This is also the initial stage in an individual developmental sequence synthesized by Argyris from the works of Erikson, Bronfenbrenner, White, Lewin, and others [39]. The elements of the developmental process—generally, actualization, differentiation, and integration—may also be attributes of the developmental process of individual and community participation. As such they may serve as a sequential goal structure in the organization of participatory processes. The sequence includes:

(1) From passive to active
(2) From dependence to independence
(3) From simple to increasingly complex behavior
(4) Erratic, temporary interests give way to more durable ones
(5) Increasingly long-range perspective
(6) Subordinancy gives way to equality and superordinancy
(7) Increasing self-awareness and control of behavior.

Participatory planning and management has been extensively experimented with in

industrial production contexts over the last two decades by a special area in management science known as socio-technical systems. Although, as noted earlier, production processes tend to be more hierarchical while behavioral systems tend to be more reticular, the results of these experiments are useful to understanding participation in the context of urban planning. The usefulness of the socio-technical experiments is due partly to the broad inclusion of social and personal behavioral systems in the industrial experiments, and partly because the focus of the experiments was on these behavioral systems. Also, in this context a job is not regarded as a specific production task or task sequence, but rather more generally as a purposive and productive activity, as productive "doing."

The central concern of the socio-technical concept is the interface of people and technical system which produces the best match from both points of view [40]. The general psychological requirements for job content are important in socio-technical systems as they affect the development of the individual employee. They are also relevant to citizen roles in participatory planning to the extent that socio-technical systems and participatory planning share a concern with the integration of a productive process with its related personal and social developmental processes. Trist identifies the basic requirements as: job content should be challenging; it should provide continuous learning; the participant has his own area of decisionmaking; there is social support and recognition; he is able to relate what he does to his social life; and, his input leads to a more desirable future [41]. The last requirement—input has transcendent value—is particularly important in the planning context as planning deals extensively with the future.

A central element in successful socio-technical experiments has been a provision for the development of competence in the individual and the promotion of a climate which is supportive of cognitive and emotional exploration and development [42]. Successful refers to identifiable benefits to both the production process and the individuals involved. Broadening the concept of industrial production beyond technical efficiency to include policies that are growth-oriented for the individual worker and task group has demonstrated overall benefits that are measurable in terms of worker health, absenteeism and turnover, and improvements in general morale and worker satisfaction. It has also led to substantial improvements in the output of the productive system [43].

The concept of a productive socio-technical system is substantially equivalent to the concept of participatory planning. This suggests that if participation comprehensively works in industrial contexts it should work equally well in planning. Why not structure the planning process to be a learning, developmental, health promoting experience for the participant and his community? This would not only directly enhance opportunities for human growth in society but would increase the effectiveness of planning in the community, urban and societal contexts.

IV. The Planning Process as a Learning System

During the last decade systems theorists have shown considerable interest in biological and social systems and have characterized them as adaptive, learning, open systems

or as self-organizing. The general areas of interest are their regulative processes, the nature of their relationship to the environment, and the processes whereby they reprogram or restructure themselves to maintain stability over time. A more specific concern in the study of learning systems is the process of cumulative embodiment and transmission of information, or the evolution of knowledge.

The initial cogent and extensive formulation of what has since been termed evolutionary epistemology is commonly attributed to the work of John Dewey. Early in this century Dewey was concerned with thought as an evolutionary process and the function of thought in the determination of the future consequences of action; also the systemic relationship between organism and environment. His work dealt extensively with the interaction of man and environment in the development of societal intelligence; and the public visibility of values operational in the societal system for validation and development. Dewey was concerned with the processes whereby an improved society is transmitted to future generations. To the extent that individual intelligence is an integral element of societal intelligence, Dewey's views have been confirmed by recent work in developmental psychology. The implication for planning is that, through participation, planning can become an important part of this process. Participatory planning can provide definite opportunities for the individual to interact with his environment, thus contributing to his own development and to the development of the societal whole. This becomes a fundamental consideration to a planning process which intends to become instrumental in the development of a society that enhances human existence.

We have come to see the societal system as a transmitter of information by which it makes increasingly better adjustments among its parts and to its composite environment. We have seen that the societal system is an aggregate of highly interdependent subsystems, none of which is capable of characterizing the whole system except that they all must be adaptive if they are to endure and contribute to the endurability of the whole. Planning is a societal subsystem and an increasingly important one. Although the role of planning in the societal whole has not been explicitly dealt with in this paper it should be readily apparent that adaptivity in the planning system is a central factor in the development and maintenance of societal adaptability and stability.

The fundamental property of learning, self-organizing systems is that their structure is a function of their environmental experience. A change in experience includes a change in structure [44]. Since the environment is permeated by change and transient variety, these systems are continually and cumulatively changing structure. But because this is usually a gradual, continuous, cumulative process it is difficult to observe. We must turn to dramatic situations for examples: an individual whose world-view and self-image changes through the experience of therapy or encounter-group activity; a family whose interrelated role structure changes through the loss of a central member; a community which changes with the occurrence of a major natural disaster or rapid shift in its economic base. But since the change in structure is generally an orderly process the concern is more with the behavior of the system than with its structure [45]. The behavior of learning systems generally involves the simultaneous interaction of an array of variables, and the regulative processes which control these interactions are only recently being understood. Most developments in multi-

variable control theory are extensions from single variable systems such as the Stimulus-Response theory. However, Mesarovic regards this as illogical since single variable systems are seen as special cases of multi-variable systems [46].

Since learning involves changes in system structure, *learning can only occur in bounded systems* [47]. This is the source of concern with boundaries or entitivity in the systems literature and the concern with community in this paper. This is also an important factor in the overall adaptivity of a system. Multilevel, decentralized, reticular systems have a high level of subsystem entitivity and can adapt faster than integrated, centralized, hierarchical systems because changes can be localized within an entity, made less costly and more rapidly [48]. Also higher level decision units are concerned with the broader aspects of overall system behavior; their decision periods are longer—they cannot act more frequently than lower level units because they are dependent on the performance of lower units and are organized for more general changes and slower rates of change. The lower units, being more intimately involved with the environment, are responsive to local changes and react faster. When entitivity does not exist in lower units—that is, when higher level units control rather than condition the behavior of the lower units—the result is a slower, less adaptive system and one whose structure is necessarily subject to internal strain.

The necessity for structural change and differential rates of change among the elements of a system argue for entitivity. These arguments apply equally well in the horizontal and vertical dimensions of a system. This strongly suggests that communities should be preserved and the definition of their behavioral boundaries be strengthened.

Another argument for vertical boundaries is provided by Mesarovic: "The principles or laws used to characterize the system on any stratum cannot generally be derived from principles used among other stratum." [49] This is because the contexts in which different strata of a system operate are generally not mutually related and, as noted earlier, because characteristics are added or removed by a change in level in a system. Since the lower units of a learning, self-organizing system must be oriented outward—to respond to environmental change—they can be seen as necessarily semi-autonomous. Lower level performance can then be viewed as effective response to the environment—adaptivity—rather than compliant response to control functions. This way the entire system can be open to restructuring but this necessarily may mean a negative response to upper level intervention. *The resistance of a community to upper level intervention should signal to the upper levels that changes may be occurring, that new adaptations are being made, rather than signaling insubordination in the community.*

This becomes the fundamental rationale for establishing the semi-autonomy of subsystem decisionmaking—the ability to act relevantly to a certain context. It also becomes the fundamental rationale for the inclusion of the citizen and community in substantive planning. But conventionally, citizen groups are set up by some problem-oriented planning effort. Often the only objective is to structure citizen "participation" so that the professional planners, public officials and administrators are seen as "acting in the public interest" in the way *they* plan to solve the problem *they* have defined.

The planning process as a learning, self-organizing system requires that citizen groups not be externally "structured." They can be so regarded because the process

provides the *opportunity* for participation rather than pre-specified input. A fundamental property of planning as a learning system is the *way* the citizens, as sources of variety and deviation, organize themselves. This is the central learning process of the system—introduce some variety and deviation that reorients the system away from previous norms, which were the results of previous adaptations, towards new norms oriented to new adaptations. This necessarily means, however, that the planners and public officers in the planning process must be willing to let some *unforeseeable* aspect of the process come under the control of the participants.

Earlier in this paper it was suggested that rationality needed to include consensual and participatory elements in order to claim legitimacy as a system of thought for planning. Further, it was suggested that this would lead to planning as a learning system. But, it was argued that the planning system would have to be structured on a reticular rather than hierarchical basis in order to integrate consensual and participatory elements. A reticular participatory planning system is a rational system because it promises to substantially contribute to the achievement of societal goals, and to the adaptivity and stability of society. Finally, a reticular participatory planning system is a learning system because it contributes to the competence of individuals and communities, and continually changes structure as it is exposed, by the citizen, to the transient variety of the environment.

AUTHOR'S NOTE

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