A Choice Theory of Planning*

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PLANNING is a set of procedures. The theory we present rests on this belief. We will analyze the implications of this assertion and then identify the steps comprising these procedures. Further, we will show the bearing of these steps on behavior in fields where planning, as we define it, is practiced. What we have to say applies equally well to such diverse endeavors as urban land use planning, national economic planning, business planning, and others, for the same steps are followed no matter what the substantive or geographic focus.[1]

Planning Defined

We define planning as a process for determining appropriate future action through a sequence of choices. We use *determining* in two senses: *finding out* and *assuring*. Since appropriate implies a criterion for making judgments concerning preferred states, it follows that planning incorporates a notion of goals. *Action* embodies specifics, and so we face the question of relating general ends and particular means. We further note from the definition that *action* is the eventual outcome of planning efforts, and, thus, a theory of planning must be directed to problems of effectuation.

The choices which constitute the planning process are made at three levels: first, the selection of ends and criteria; second, the identification of a set of alternatives consistent with these general prescriptives, and the selection of a desired alternative; and, third, guidance of action toward

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[1] However, the substantive is important and gives a particular instance of planning its special character. We leave a discussion of this point to another time, and focus in this paper on the ground common to all types of planning.

determined ends. Each of these choices requires the exercise of judgment; judgment permeates planning.[2] We will show the need for and some means of rendering judgments explicitly and with reason.[3]

Having introduced the definitional base, we now turn to three sets of propositions that are prerequisites for our planning theory. The first set refers to the subject-matter of planning and the environment in which it takes place, and is offered as postulates depicting the world-as-it-is. The second set of propositions describes the purposes for which planning is employed. We infer the purposes of planning, as defined above, from the uses to which it is put in dealing with the conditions set forth in the first set of propositions. The third set identifies elements which in their interrelation compose the planning act and distinguish it from other forms of behavior. This set is derived from consideration of planning's purposes and the environmental postulates.

The Environment Surrounding Planning

The following set of postulates, describing aspects of the world-as-it-is, rests in part on axioms that have been found helpful in economic theory. The remaining postulates in this set also are statements on which there is general agreement.

1. Individuals have preferences and behave in accordance with them.[4] Actors are to some extent able to order their preferences. Different objects of preference, for any actor, may substitute for or complement each other.[5] Preferences express comparisons between wants: these wants have several features. An actor never experiences complete satisfaction of all his wants. Further, man finds that enjoyment brought on by addition to those goods and services already held pales with possession of increasing amounts.

[2] The judgment basis of decision-making in general is analyzed by Churchman [7]. Numbers in brackets refer to the Bibliography at the end of this article.

[3] We are concerned with the problem, so trenchantly posed by Haar [13], that a major task confronting the planner is to see that he acts in a nonarbitrary manner, administratively as well as conceptually. We develop in these pages a theory of nonarbitrary planning.

[4] Preferences are not absolute, yet they can be measured with tools of probability analysis.

[5] An individual's consumption of fuel would rise with purchase of a car: gas and autos are complementary goods. Use of public transit facilities will decline with the acquisition of a car: these are substitutable entities.

This is the familiar notion of diminishing marginal utility. To say that man is able to order his preferences among all alternatives is an exaggeration. For example, "poverty of desires" may limit his preference field. This problem becomes even more acute where alternative future goal situations are to be compared.

2. Actors vary in their preferences. The fact that men do not appraise things similarly complicates the allocation problem in society. It does so in two ways: the aggregation of individual preferences is sometimes a highly complex matter.[6] Second, there is considerable dispute whether there is any group interest or common welfare other than the sum of individual preferences.[7] It is often possible, however, to group the individuals with similar preference patterns. Such, for example, is the practice of economic determinists as well as of social analysts accustomed to draw conclusions from observation of manifest behavior.

3. Goods are produced and services, including labor, are performed subject to the constraint that diminishing returns set in at a given level. Beyond a certain point, "another buck just doesn't give as big a bang as it used to". This idea corresponds, on the supply side, to the notion on the demand side of diminishing marginal utility from goods and services.

4. Resources are scarce and consequently output is limited. Factors which go into the production of goods and services are, at any one point in time, limited in supply. This is the essence of the problem of priorities; we cannot achieve all things that need doing, or are desirable, at any one time.

5. The entity for which planning is undertaken—be it a production unit or a metropolitan area—will typically consist of interrelated parts generally in flux. Any action has consequences that add additional reverberations to such a system. To describe this condition we use terms such as "network effect", "organic structure", or "the need for coordination".

6. Man operates with imperfect knowledge. He also is often illogical (by formal canons), as where his preferences are not transitive,[8] or where

[6] This is the aggregation paradox analyzed by Arrow [2]. See also Baumol [5], ch. 13.

[7] Meyerson and Banfield [20], pp. 322–9, present the contending viewpoints.

[8] The transitivity assumption appears in various deductive systems. A transitive preference scheme will posit that where an individual prefers X to Y, and Y to Z, he also prefers X to Z.

his several values, at least at the levels at which he perceives them, are in conflict with each other. Thus, his abilities to calculate and control are ever limited. Severe, too, is conflict between demands for immediate action and for non-arbitrary decision. Kaplan [16] has well illustrated this predicament. "We are playing a game in a taxi with the meter running; even though we may possess a theory of the game, the cost of computing the optimal strategy may be too great." Man will doubtlessly continue to operate somewhere in the realm of bounded rationality, rather than reach perfect rationality.[9]

Planning's Purposes

Given these postulates, which describe the environment in which planning takes place, we move on to discuss why the planning act is undertaken. Ultimate purposes cannot be appraised from within a system: there is need to rely on outside criteria to evaluate such ends. We shall limit our discussion to presentation of objectives implicit in planning endeavors.

We refer to ultimate objectives of planning (external purposes), not to substantive matters (internal purposes) such as urban renewal, harmonious land use relations, or most profitable output. What reasons might institutions have for calling on planners to help them achieve their specific objectives?

Planning has been employed for a number of reasons, any one of which can serve independently or in combination with others as the objective of planning. Critics of the direction, efficacy, and value of contemporary planning should recognize the possibility of such a variety of perspectives; they might then see that the means in question are appraised differently for different purposes.

Three classes of objectives seem to exist. The first is efficiency and rational action; the second is market aid or replacement; and the third may be labeled change or widening choice.

1. *Efficiency and rational action.* In a world of scarcity there is a need to conserve resources and also to allocate them in an efficient manner. Planning is seen as a means of reducing waste or producing the greatest return

[9] For example, Schoeffler's [24] is a model of full rationality: Simon's [26] model postulates "satisficing," a more limited concept of rationality.

from employment of resources, although the line between these is not always clear. The distinction may rest on the amount of control that is exercised.[10] Definitions of waste or of optimum allocation hinge on assessment of wants. As we postulated above, different clients have different patterns of preference. Therefore the efficient utilization of resources would be that which satisfied the particular preferences of individual actors—as such preferences are determined and aggregated in a manner accepted in a given society. Efficiency thus is measured in terms of the purpose it serves.

Rationality is sometimes conceived as (a) referring to increasing the reasonableness of decisions, and sometimes as (b) involving full knowledge of the system in question. In the former sense (a) the task of planning may be to provide information to decision-makers, and, in certain cases, to the clients and the public at large about what presently exists and what may be expected in the future under alternative conditions. With this information the actors can better satisfy their own wants. The latter concept of rationality (b) is far more demanding of planning, for it requires identification of the best of all alternatives evaluated with reference to all ends at stake. The alternative thus selected as optimal implies, and is implied by, an efficient course of action.

2. *Market aid or replacement.* Planning would be of little, if any, use for an environment where an open, fully competitive market (either political or economic) operated perfectly. Such a market would imply that both buyers and sellers knew fully the relative worth over time of the items and services they sought and possessed, bought and sold, and of all the alternatives they had. Such a market would also require free entry and each participant's having, as it were, a single vote, with no party exercising monopolistic control over any segment of the market. Although such a market system does not exist, it remains a goal for some purpose: particularly as a model for optimum allocation of sets of goods and services in

[10] Waste itself involves notions of efficiency or optimum output per input. Efficiency, waste, and optimizing are interrelated; fruitful discussion of their relation depends on the particular model or ideal employed. Thus these terms take on one meaning in a competitive market model and quite another in a model which has, underlying, an objective that investments not be retired until their physical usefulness has been exhausted.

response to preferences of participants. Planning may be desired precisely in order to bring the society a few steps closer to such a goal. On the other hand, certain critics deny the possibility of a working competitive market. Their objective is to replace an imperfectly operating market system with some other scheme for distribution of scarce resources in response to claims upon them. Seen from this perspective, planning is to serve a new and controlling system of pricing and distribution.

Either of these objectives seizes on planning as a vehicle which collects, analyzes, and publicizes information (such as forecasts and assessment of third-party costs and benefits) required to make reasoned decisions. Those who favor the use of planning to make the market operate effectively do not see planning as a direct agent of change, but rather as providing the factual basis that will permit various value alternatives to be confronted and tested. Those who seek a market substitute view the planning act as more directly responsible for change. In this view planning becomes a "directive" method that will in itself yield rational order; the planner's task is enlarged to include examining value alternatives and, in some instances, suggesting particular courses of action.

3. *Change or widening of choice.* Given scarcities, social and individual choices must be made about the manner in which resources are to be allocated: how, when, to whom, to what purpose, and in what combination. The pure democratic ethic posits that no one has the wisdom or ability to make decisions for the society or for another individual; choice-making is left to the individual or to a majority of the individual voters.

In today's world, the inadequacy of this position is self-evident. Individuals increasingly delegate decision-making powers to legislative bodies; legislatures delegate to administrative and executive hands. This is specifically clear in the public realm; analogous conditions prevail in industry and in other institutions. Delegation often decreases individual opportunity to choose, but this decrease has limits; the decision-maker can both question and inform the individual client about the issues at hand. The planning process can be specifically employed to widen and to publicize the range of choice of future conditions or goals, as well as of means. This function may be extended to include opening opportunities where choice can be exercised. Lack of techniques and of willingness often holds back urban planners in this realm.

Widening of choice may overlap objectives of rational action. Those choices between alternatives that are central to the rational decision-making model clearly cannot be made in the absence of knowledge about such alternatives. The chooser must be informed of the range of choices and of the implications of each of the choices open. This suggests that the planner ought to render explicit the implications of proposals.

Planning can serve as a vehicle for the portrayal of utopian solutions. As distinct from plans expressing incremental improvements or even large-scale modifications along familiar lines, utopian plans show courses of action or end states involving fundamental change in values or environmental reconstruction. The utopian plan may open choice in several ways. It may give meaning to an old value by placing it in an unfamiliar setting. It may spell out the implications of total commitment to one or more values. It may shake belief in the *status quo* and suggest possibility of change and the directions this may take.[11]

A belief in the possibility of effective planning rests on the assumption that man controls his destiny: either by affecting the rate and direction of ongoing change or by initiating such motion. Planning is often relied on to achieve such control. Many of the reform features of city planning can be traced to a conviction that it is possible to improve man's conditions or to arrest decline.

Planning Characteristics

We next consider those elements which, in their interrelations, characterize the planning act. Though we wish to use these elements to distinguish planning from other forms of behavior, we recognize the considerable overlap between such fields as operations research, decision-making, or problem-solving, and planning.

We suggest the following as necessary components of the planning act.

1. *The achievement of ends.* Our definition of planning incorporates a concept of a purposive process keyed to preferred, ordered ends. Such ends may be directions or rates of change, as well as terminal states. Means

[11] On the relations between utopias and urban planning, see: Dahl and Lindblom [9], pp. 86–88; Meyerson [19]; Reiner [22]; and Riesman [23].

are not proposed for their own sake, but as instruments to accomplish these. The ends are not given, irrevocable, but are subject to analysis.

2. *Exercise of choice.* Planning is behavior which sees—at many levels—values formulated, means established, and alternatives selected. Our definition of planning stresses exercise of choice as its characteristic intellectual act.

3. *Orientation to the future.* Time is a valued and depletable resource consumed in effecting any end. Planning, an end-directed process, is therefore future oriented. Each of the ultimate objectives of planning implies a need in the present for information about the future. Estimates of future states are also important for what they imply for present behavior; thus, points are identified where control is required if ends are to be achieved. Moreover, planning involves assigning costs to deferred goal satisfaction and to losses arising from postponed actions. The task of calculating interest rates thus implicitly incorporates planning.

4. *Action.* Planning is employed to bring about results. It is a step in an ends-means chain leading to that which is desired.

5. *Comprehensiveness.* Planning serves to relate the components of a system. In order to allow decision-makers to choose rationally among alternative programs, the planner must detail fully the ramifications of proposals. In a world of imperfect knowledge this requirement must be balanced with that of action.

The Planning Process

As he faces these realities and concerns, and as he strives to identify appropriate courses of action, the planner engages in choice at three fundamental levels. These jointly constitute the process of planning. They are: *value formulation*, *means identification*, and *effectuation*. They are the necessary and sufficient steps constituting planning. We believe each represents an analytically useful category, for associated with each step are distinct methods of operation and problems of theory.

VALUE FORMULATION

Fact and Value

Our analysis of the value-formulation process and of the planner's responsibilities in dealing with values has as its basis the philosophical distinction between fact and value.

A fact is a descriptive statement involving definitions and postulates, and a relationship. It is an assertion of the truth of the relationship. "X is Y" is one characteristic form of a factual statement.

Values may be expressed as moral statements, or as statements of preference, of criteria, or of ends—more particularly goals. For our purposes, each of these can be related to, or transformed into, any of the others. Moral statements take the form of "X ought to Y", or, in terms more familiar to urban planners, "metropolitan areas ought to be surrounded by greenbelts". Statements of preference take the form "X is preferred to Y", or, "I would rather live in a single-family detached house than in a multifamily dwelling". Statements of ends or goals take the form "X is the end state sought", or, "Our goal in housing is the re-creation of New York as the first major city of the world without a slum". Criteria statements take the form, "when confronted with a choice between X and Y, apply rule M", or "when choosing between possible urban renewal sites, select the one with the highest reuse potential".

We further maintain that a given nondefinitional assertion would belong either to the category of facts or that of values and that any discourse could be divided in this manner. There are, on the one hand, uses, tests, and criticisms singularly appropriate to values and, on the other, those singularly appropriate to facts.[12]

Yet fact and value are closely related. The separation of fact and value in itself requires certain assumptions and possibly violation of the dictates of reason.[13] Let us consider some of the ways in which fact and value may be related.

1. Factual statements and their analysis invariably reflect the values of

[12] The position presented thus far rests on logical positivism, see: Ayer [3] and Carnap [6].

[13] In the last analysis, judgment, choice, and values enter into any verification. On this point, see Churchman [7], chaps. 4–6.

their makers; if only in the importance attached to them or the sequence in which they are studied.[14]

2. Our personal experiences show that our values are colored by our understanding of facts.[15]

3. We can make factual assertions about values: for example, their distribution in a given group. Conversely, one can make value assertions about facts, as does the city planner who desires to counter the fact of public apathy about a public program.

Verification of facts and verification of values, nevertheless, involve different techniques. The definition of a fact requires the possibility of disproving the assertion. Further, the true measures of facts lie on a probabilistic continuum; we cannot be absolutely certain of any assertion. Disconfirming and verifying value statements are highly complex issues that are by no means resolved. How then can the imperative of a value statement be tested? Disagreement on a value position cannot be resolved by recourse to facts.[16] We can speak of verification of values only in terms of their consistency with values of a higher level. Eventually, however, there must be reference to ultimate values which are essentially assumed and asserted as postulates.

The many goals within a system of values can be viewed in terms of their interrelations, although we can at times conveniently focus on individual goals. Considering an individual goal as a part, rather than as the entirety, of a system of ends has important analytic consequences. One goal may appear as superior to an alternative goal when both are measured against a higher value; however, the alternative may appear as a better means of satisfying a system-wide set of ends. This suggests that goals can be compared in terms of both their intrinsic and their instrumental worth. Values exist in a hierarchy. The hierarchical relation of values provides a means for whatever testing of values is possible. A value may be tested, that is, understood and its reasonableness assessed, by specifying values of a lower level it subsumes and by comparing it with other lower-level values as a means to achieve values of a higher level. We emphasize that a given value may be viewed both as a means and an end.

[14] See, for example, Merton [18] and Myrdal [21].

[15] Stevenson [29] gives one formulation of this problem.

[16] This position has been developed by a large number of contemporary philosophers: in particular we find support in Churchman [7].

The planner, as an agent of his clients, has the task of assisting them in understanding the range of the possible in the future and of revealing open choices. He does this in two ways—one involving facts and the other, values. The planner deals with facts to predict the nature of the future. Such predictions take account of a variety of different factors in the environment as well as likely effects of alternative controls. Such predictions permit comparison with conditions that are desired. Knowledge of gaps between desired and predicted conditions may suggest the nature of further controls needed.

The planner deals with values to discover which future conditions are presently desired and which may be desired by future clients. The environment desired for the future is, *in the first instance*, purely a matter of values. There is nothing in the factual side of the planner's work which, *in the first instance*, can reveal to him the desired nature of the future. But once a particular set of values concerning the future is posited, knowledge of facts is needed to determine the relative weight of a particular value. For example, value X might be preferred in the first instance, but subsequent knowledge of the costs of achieving X might lead to heightened consideration of another value. We agree with Kaplan [16] who has written of the importance of "confronting values with facts" in order to make "valuation realistic".

Constraints should be imposed only after choices are expressed. All too often planners first predict the nature of the future, then help set in motion programs that fulfill this prophecy, and thus limit men's aspirations. Planners should not let such predictions about the future limit the range of choice, for controls can alter the future and can make predicted outcomes improbable. However, evidence revealed through prediction can suggest undesirable aspects of a given course of control. Thus, prediction and control are complementary.

We would prefer to see planning operate under the assumption that all things are possible, given the willingness to meet their costs. Only when the client of the planner reveals that the costs are excessive should the future condition be excluded from consideration. If this procedure is followed, the planner's client remains in control.

Responsibility

Although we propose that the planner become vitally involved with values, we must make clear our belief that the planner should act with a keen sense of responsibility. He cannot, as an agent of his clients, impose his own ideas of what is right or wrong. We do not wish to see the planner's influence on decisions limited, but we would argue strongly that the planner's role in dealing with values must be constrained so that he acts as a responsible agent.

If an ultimate objective of planning is to widen choice, and the opportunity to choose, then the planner has the obligation not to limit choice arbitrarily. If an ultimate objective of planning is efficiency, then the planner cannot afford prematurely to dismiss any set of means. An examination of current goal-setting practice would show that planners as a rule fail to reject explicitly alternatives not included within their final plans. Thus, a proposed master plan contains a list of goals, but not a list of rejected goals. Further, such plans seldom indicate why the accepted goals were selected. If the planner is to be permitted to reject alternatives it must be because he has some knowledge or skill that provides a rational basis for such acts of rejection. This basis can be provided only by the values of the clients. Our contention rests on the thesis that goals are value statements, that value statements are not objectively verifiable, and, therefore, that the planner, by himself, cannot reasonably accept or reject goals for the public. This is crucial: we maintain that neither the planner's technical competence nor his wisdom entitles him to ascribe or dictate values to his immediate or ultimate clients. This view is in keeping with the democratic prescriptive that public decision-making and action should reflect the will of the client; a concept which rejects the notion that planners or other technicians are endowed with the ability to divine either the client's will or a public will.[17]

Clients

It is not for the planner to make the final decision transforming values into policy commitments. His role is to identify distribution of values

[17] Another reason for interest in clients' values is that their assessment permits prediction of aggregate private decisions and behavior, and thus leads to more effective planning.

among people, and how values are weighed against each other. To do this, the planner must determine relevant client groups. We can speak of two general classes: the immediate client, or the planner's employer; and the ultimate clients, those affected by the proposals.

The values sought are the clients; we reject the notion that individuals express the values of an institution, or what has been called the organismic view of the public interest. Values are personal; institutions do not hold values and purported expressions of institutional will cannot be proved or disproved. An institution does not have a will separate from that of its members; otherwise, man is the ward of that which he can master and control. Institutions exist to serve man. It is important to state our position explicitly (although ours is not an uncommon one) because of its meaning for the planning process we describe. It implies that the planner should not search for the "interest" of the entity for which he works, be it Philadelphia, General Motors, or the United States.

The planner therefore must take a preliminary step: the identification of his clients. Often, terms of employment prescribe the reference group for the planner's activity. But in public planning, with intervening administrative and legislative levels, to identify clients is a difficult task, and one that is often sidestepped.[18] The failure properly to identify relevant clients lies at the bottom of many of the current difficulties of the urban renewal program.[19]

In some situations the planner's perspective is limited to the values given by his immediate client, for his employer may exclude the planner from what might be deemed a political area. When the planner is permitted (or, as is frequently the case, asked and urged) to study the larger client group, serious problems confront him. What type of information should be elicited from the clients? Should the planner study the values of a random sample of the population, or should he classify the relevant population and then sample the different groups, or should he otherwise assign values to these aggregations? If he has chosen the second course, the planner will be required to establish explicit criteria for the definition of groups.

[18] Likewise, is management or the stockholder the immediate client in a corporate planning situation? See *Dodge* vs. *Ford Motor Co.*, 204 Mich. 459, 170 N.W. 688. See also, operation research literature, viz. Churchman, Ackoff, and Arnoff [8], chap. 1.

[19] As documented by Gans [12] and Seeley [25].

One such criterion should be to aggregate individuals expected to have similar cost-benefit expectations.

Clients might thus be grouped according to income, race, age, occupational characteristics, location, or by roles in various institutions. Any one individual might fall in several or all such categories. Just as we deny an institutional will, neither shall we find a group interest. That which expresses the values of a majority of a group need neither represent that class's permanent view nor the views of each member.

Analysis of Values

Let us now identify what information about the values of clients should be sought and analyzed. Values are not self-evident, simple entities, but, though complex, neither do they defy analysis. The planner should consider values from two perspectives: first, as the clients' internal states of valuation: second, externally, as the entities which are valued. It is easy to slip into a position where internal and external values are not distinguished, where the preference structure of an individual is not separated analytically from the commodities, services, or conditions which are the objects of his preference. We may find that for some purposes value analysis should concentrate on the internal states, such as those previously discussed, while, for other purposes, study can more fruitfully focus on the external. As one proceeds from more general to more specific values, the external elements seem more evident, dominant, and measurable.

To lend substance to our discussion of internal states, let us focus on values such as health, wealth, and power,[20] which might be considered values at a middle range of generality. These values should be considered in the following ways.

1. For a given value: how widely is it held? What is its spread and distribution in the institution and amongst client groups?

2. What is the intensity of the value? Techniques of measurement are not sharply developed here. The only meaningful intensity scale may be

[20] We sidestep the question of the selection of these values; they are taken from Lasswell and Kaplan [17] who offered these as part of a plausible value system.

one measuring overt behavior, for example, migration. It may also be desirable to distinguish between those values held in private and those shared as when attitudes are publicly voiced or voted. The planner might be particularly concerned with identifying conditions under which privately held values become public. This is related to whether a value is strongly held by an individual, or whether he is amenable to changing it.

3. Does the individual believe he can or cannot influence the achievement or a goal?

What are the characteristics of the external value entities? The stock of such things as wealth or health that an individual possesses at any one time, in combination with his internal values, provides a significant basis for planning analysis. An individual's well-being is measured by:

(a) his absolute stock of valued entities;
(b) divergence of his stock from his own goals (his aspirations); and
(c) divergence of the stock of valued entities from a level set by others (this is the familiar notion of standards).

The difference noted in (b) and (c) need not be equal.[21] For purposes of analysis, information on both gaps is desirable. A criterion for planning action would give a directive to narrow either the subjective gap, the objective gap, or some combination.

Valued entities can be measured in several ways. First, regarding the amount held or desired: is possession a 'yes-no' phenomenon, does it exist in discrete lumps, or is it measured along a continuum?[22] Second, how easily is the valued item transferred from person to person?[23] Third, along the continuum which measures the individual or social origin of a value: is the valued entity internalized, or is it other-directed?[24] Fourth,

[21] For example, the political theorist asks: Can freedom be measured objectively, or is it purely a subjective state? Or, in the urban planner's world: How is adequacy of municipal services to be measured?

[22] Survival might be in the first category, days at work without interruptions due to illness in the second, and degree of health in the third.

[23] Wealth has low transfer costs, whereas health or rectitude have high costs of transfer.

[24] Thus, affection may be totally other-directed, whereas, depending on market conditions and assumptions, wealth is only partly so. Health is largely internalized, although not exclusively so: subjective well-being reflects knowledge of others' states, and identification of well-being hinges partly on publicly held criteria.

measurement of valued objects also must embody recognition that some are not subject to restrictions of finiteness.[25]

Planning analysis of an entire value system would lead to portrayal of value hierarchies. It is by study of such structures and by defining the levels therein that it is possible to identify, reduce, or even eliminate the inconsistencies in pursuit of a system of goals. With knowledge of the hierarchy, the planner can better pinpoint specific means.

Ideally, for purposes of planning analysis, value hierarchies should be formulated to provide criteria for specific action or inaction in all cases. We recognize that this sets a highly demanding requirement, for it must account for discord and inconsistencies within and among people. Yet, there are at least three processes the planner may employ to resolve value conflict and efficiently attain plural goals. First, assigning exchange prices to several goals permits their joint pursuit. Second, posing alternatives, analyzing ramifications, and disseminating information contribute to effective bargaining between proponents of contending values. Third, rendering value meanings explicit provides common grounds for appraisal.

Though the planner tries to formulate unitary hierarchies, these may not be attainable, and, in any case, are not desirable in their monolithically consistent form. For there is virtue in highlighting conflict of values and goals: a richer, if only temporary, synthesis grows out of advocacy.

Evaluation of Values

Although a value statement cannot be verified by empirical data, it can be referred to other value statements in the hierarchical structure. Furthermore, implications of values can be detailed to permit greater understanding of their meanings. The process of rendering a value explicit also reveals the way in which the value may be transformed into a goal statement. Let us illustrate the different ways of treating a value by reference

[25] Wealth would be quite finite, given a particular technological and capital context, a pricing system, and a fixed time period. Health may be finite, but only within some of its definitions. It is harder to assign such ceilings to affection (if, however, this were to be measured in sociometric terms, there is a ceiling, a very high one, on interaction possibilities). Justice or skill would seem to defy notions of a maximum, although it may be possible to set a minimum. Finiteness is related to depletability. Thus, commodities constituting wealth are generally consumed in use, while skills grow with exercise.

to a currently popular aim: "It is desirable to maintain the level of investment in, and the output from, centrally located business districts." The transformation of this statement into a planning goal is: "The preservation of the C.B.D." For purposes of analysis, we might begin by defining the key terms in either the moral statement or the goal statement. For example, what is meant by the term "preserve"?[26] Next we would seek the reasons underlying the goal. We could ask what benefits and costs would arise under each alternative. Or, we might observe that the value was related to others.[27] In sum, the process of explaining the possible reasons underlying a value and the possible effects of its pursuit would permit more intelligent choices between such a value and other similarly treated values.

The final product of the value formulation stage of planning should be alternative sets of objectively measurable goals and criteria. Objective measures are prescribed first because they limit the possibility of abuse through arbitrary decision. Second, if an objective of planning action is to achieve ends, then the ends selected must be achievable. Some ends may be unattainable because of their generality, vagueness, or ambiguity. We do not assert that such ends do not have importance in value formulation, but an objectively measurable end must be deduced from them if a specific direction is to be given to planning means. Criteria are employed for choosing the best means to achieve stated ends. Only where criteria are stated in objective form can alternative means be reliably compared, with assurance that the means selected are directed toward the same goals.

We have suggested that value formulation yields alternative sets of goals. This requirement is supported by the following reasoning. We plan in a world of limited knowledge, a world in which facts are probabilistic and values debatable. Under such circumstances "correct" decisions do not

[26] In speaking of preserving a C.B.D., is the implication that the C.B.D.'s activity should be maintained at its current level, or at its current level relative to a certain region as a whole? Or, does "preserve" mean that the older business district should be maintained as a central focus for particular functions: trade, exchange, recreation, etc.?

[27] Preservation of the C.B.D. may be sought in order to enlarge the assessment base so as to permit reduction of taxes. Or, it may be sought out of the belief that scale factors operate which require a central complex as a necessary condition for provision of desired facilities. Both these hypotheses are subject to evaluation and the validity of the initial goal (preserve the C.B.D.) may thus be tested.

exist. The merit of a decision can only be appraised by values held individually or in a collectivity, but such values, as we have pointed out, are not verifiable. In such a situation, the goal for decision-making should be increasing the degree of assurance (of decision-makers and clients) that the choice made was at least as reasonable or more reasonable than any other alternative. This goal is best attained by bringing to bear on every decision the greatest amount of relevant information concerning the ramifications of all alternatives.

In general, if the planner is not to make final decisions (and even where he is delegated the power to make such decisions), alternative possibilities should be explicitly scrutinized. We object strenuously to the current practice in urban planning of excluding all but the selected alternatives from consideration.[28] Even if the planner prefers a single alternative, a preference we believe he should assert as strongly as desired and permitted, he has the obligation to detail objectively and explicitly the meaning and implication of each alternative. We recognize that the planner must exercise judgment as to which alternatives should be considered as possibilities. But this can be done discreetly through explication of the criteria he employs.

Time Perspective of Plans

We have espoused widening clients' choices. The planner, to do so, must offer value alternatives not currently given great weight in society. The planner should be called upon to present tentative objectives—new, radical, or even absurd alternatives. This involves creative and utopian thought and design. The planner can engage in such thought; possibilities for significant societal change are great (although the immediate willingness may be lacking). Significant planned change generally takes a long time. For this reason, a long-range plan should embody consideration of alternatives which set forth values of a higher level and include some which are distinctly different from those currently approved.

A short-term plan on the other hand will suffer from constraints of time and from necessity for action. This being true, it should focus on purposes

[28] Attempts to display alternatives prove worthless where there is a failure to compare the relative costs and benefits of the posed alternatives.

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PART I

WHAT IS PLANNING THEORY?

Introduction

IN THIS introductory section, I shall set out to demonstrate that there is a useful distinction to be drawn between theory *in* planning and theory *of* planning, and why this reader concentrates on the latter. Also, I make a further distinction between *normative* and *positive* or behavioural theory of planning, and how this affects the material included. Finally, as an introduction to an important paper devoted to this topic, I shall review essays considering the question of what is planning theory.

THEORY IN PLANNING VERSUS THEORY OF PLANNING

Planning is the application of scientific method—however crude—to policy-making.[1] What this means is that conscious efforts are made to increase the validity of policies in terms of the present and anticipated future of the environment. What it does not mean is that planners take over in the field of politics.

Validity is an attribute of the process by which decisions are made. This process involves advisers, as the suppliers of scientific intelligence, and decision-makers. Advisers and decision-makers interact, thus forming a planning agency. Planning is what planning agencies do, i.e. bring scien-

[1] Definitions given for systems analysis (Quade, 1968) and operational research (Beer, 1966) are the same as that of planning given above. This underlines one of the points to be made about planning theory, i.e. the generality of the phenomenon planning, and hence its wide applicability.

tific advice to bear on decisions concerning policies during an interactive process involving the roles of advisers and decision-makers.

The relationship between decision-makers and their advisers is often presented as that between master and servant: managers employ operational researchers (Beer, 1966), military staffs employ systems analysts (Quade, 1968), planning committees employ planners. The assumption, each time, is quite clearly that of the adviser coming into the game *at the pleasure* of the decision-maker.

There is nothing inherently wrong with being employed to help. The question for the adviser is only whether the process by which he and his decision-making master arrive at decisions is valid, or whether their relationship distorts this process. He might ask questions like: Does he pay regard to the evidence which I submit? Does the decision-maker provide me with adequate guidance on the problems which he wants solved? Are the reasons for his making a decision valid in their own terms? These are reasonable questions to ask for somebody concerned with the validity of the process which he is engaged in.

The point is that decision-makers, like other people, do not like their actions and their motives being questioned, and certainly not by their advisers, who are supposed to help *them*. Advisers in many fields have therefore had occasion to complain about their masters. Having trained minds, they have gone beyond grumbling and asked that simple question which is at the heart of all scientific investigation: *Why?* Upon which they have concluded that their own relationship with their masters (in short, the planning agency) must become the object of reflection, theoretical understanding and, ultimately, transformation so that planning shall become more valid. They have moved from considering the role of their own type of scientific theory *in* planning to the theory *of* planning.

Rather than talking specifically about planners and politicians, I have couched this argument in general terms. This is because there is evidence for the generality of this phenomenon of advisers becoming interested in the way in which their advice reaches fruition. That town planners are concerning themselves with the theory of planning in these terms will be documented in this reader. But social workers are doing the same, especially now that they are reorganizing their departments (Kogan and Terry, 1971; Foren and Brown, 1971). Similarly, operational researchers have taken a look at planning in private enterprise (e.g. Beer, 1966; Ackoff, 1969) and

in public authorities (Friend and Jessop, 1969). The extent to which their findings and prescriptions are similar, and the degree to which the different fields of planning begin to influence each other, suggest that planning is a general approach to decision-making and is not tied to the activities of any profession or department of government.

There are other reasons for making the distinction between theory of planning and theory in planning. One lies in the differences between *form* and *content*. A theory on which a policy is based may be perfectly valid in itself, and the policy still be invalid. Thus, some models may be a perfect way of allocating residential activities. Yet policies based on them sometimes run into difficulties because a local amenity group puts up a successful fight against expansion of their village. The conclusion which the model builder must draw from this is that the way in which what he should do has been determined in the first instance has been invalid, or that the politician is not really representative of his constituency. These are questions concerning precisely the form of the planning process, and not the content of planning policies.

The second reason why the distinction between theory in planning and theory of planning ought to be made is that there are unfortunate consequences in *not* making it. J. Brian McLoughlin (1969), in his book on the "systems approach" to urban and regional planning, advances a view of planning theory based in location theory, i.e. what I call theory *in* planning. But, quite clearly, he also makes pronouncements as regards the theory *of* planning. For instance, he suggests that the planning process must have a "shape" which is isomorphic to the process by which human beings transform their environment. In this way, the whole theory of planning becomes a corollary to theory in planning. The attention given to it is thereby reduced so that McLoughlin has been criticized—quite rightly as I think—for putting forward a simplistic view of the actual processes by which decisions are made (Silvester, 1971, 1972).

I hasten to say that I hope the distinction which I propose will not result in separation. There are hopeful signs that both sides are drawing closer together. Recent views of urban systems picture them as socio-technical complexes with their institutional part including planning agencies. Proponents of theory of planning, on the other hand, begin to take into account what Bolan, in the last paper included in this selection (see pp. 371–94), calls the "issue attributes". These reflect our knowledge con-

cerning the environment and hence the state of theory *in* planning, for example whether this leads to reliable predictions or whether there is a great element of uncertainty in predictions derived from it. It is perfectly conceivable, therefore, to envisage one type of planning theory forming an envelope to the other, and there is no *a priori* way of saying which would contain which. It is only that, currently, urban and regional planners still neglect the theory of planning, seeing it as somewhat ephemeral instead of the basis of what they are doing. It is this neglect which this reader should rectify.

NORMATIVE VERSUS POSITIVE THEORIES OF PLANNING

As regards theory of planning, the distinction has been drawn between normative and behavioural approaches, first of all to the study of decision-making in management (Cyert and March, 1959; Dyckman, 1961). It is a distinction made in the planning study by Daland and Parker (1962), and recently also in the study of "policy formation" by Bauer (1968). The distinction is analogous to that between (normative) political theory and (positive) political science: normative theory is concerned with how planners ought to proceed rationally. Behavioural approaches focus more on the limitations which they are up against in trying to fulfil their programme of rational action. (See Bolan's paper, in particular p. 373.)

Obviously, normative and positive theory of planning have some bearing on each other. In the first instance one might say that empirical findings modify prescriptions. Thus, Lindblom and his collaborators maintain that since in actual fact planning never proceeds rationally, rational-comprehensive planning is not a suitable normative concept (Dahl and Lindblom, 1953; Braybrooke and Lindblom, 1963; Lindblom, 1965, see also pp. 151–69).

But Banfield (see p. 149) draws the opposite conclusion from finding that organizations do not engage in rational planning. For him, what remains is precisely the validity of rationality as a normative ideal! Yet, surely this must mean that some form of progress towards this ideal is conceivable. It is precisely in the analysis of the conditions under which such progress may take place that behavioural approaches to the study of planning may help.

Closely related to this idea is that of turning the opposing ideals of rational-comprehensive and piecemeal planning into empirical concepts. Thus, Madge (1968) suggests: ". . . 'total' and 'piecemeal' theories are the poles between which actual ideologies of social planning vary."

Similarly, Kahn (1969), in a recent collection of *Studies in Social Policy and Planning*, observes: "In the United States . . . the distinction between the incremental and the comprehensive is quantitative and not qualitative."

I have myself moved into this direction in some of my own writing, devising "dimensions of planning behaviour", one of them being precisely that of the rational versus the piecemeal mode of planning (Faludi, 1970, 1971).

Generally, the existence of concepts and instruments for relating theory to empirical reality, i.e. of a positive theory of planning, is seen as a sign of *maturity* of an area of intellectual pursuit. Admitting that most of the material included remains on the level of normative theory therefore means admitting to lack of sophistication of the theory of planning. Thus, most of the papers in Parts II and III are more prescriptive than descriptive. Even where Banfield and Lindblom draw on the empirical study of planning, all that they provide are generalizations which, furthermore, relate primarily to what they have to say about the rational planning process as an ideal. The most clearly empirical study in these sections is Altshuler's essay (see pp. 193–209).

Part IV of this reader is somewhere between a normative and a descriptive orientation. It is full of empirical references, though mostly at the level of tentative observations. Use is made of the body of literature which is available in organizational behaviour, though interest is still with what planning ought to be.

It is only in Part V that the positive theory of planning dominates. Here, the poverty of this field becomes evident in the extremely narrow range of literature on which one can draw. Besides, what is presented are frameworks for empirical research, not results. The great amount of effort that would be needed to obtain such results makes it questionable whether a behavioural approach would really be the answer to that most pressing problem of theory of planning: to provide a basis for improvements to planning procedures and planning agencies, or what has been called *meta-planning* (Wilson, 1969).

Clearly for a long time to come such meta-planning will have to rely on

a theory of planning devoid of adequate empirical backing. Besides, assuming even all the requisite research effort being spent, the significance of a positive theory may simply be that of elucidating what the obstacles in the way of achieving *alternative* ideals are, not which ideal to choose. Thus, finding interdependencies between what many individuals in society do may be construed as supporting the idea of common action, or as a regrettable limitation on individual freedom to be reckoned with, depending on one's normative assumptions. The world-as-it-is does simply not provide a final clue as to how we should wish to see it!

FRAMEWORKS FOR THE STUDY OF THEORY OF PLANNING

There has been surprisingly little written on what planning theory is or ought to be. Even in the *Journal of the American Institute of Planners* papers considering its nature and scope are far and few between. Significantly, most of them have arisen out of the effort of academics to present to their students reasonably coherent frameworks for understanding planning. Having a corps of academics reflecting upon the nature of its activity, and thereby going beyond practice, is an asset for a profession like planning, a fact which is sometimes forgotten by its practitioners. All too often, the latter tend to see the planning schools as training camps for professionals in their own image. However, as Kaplan (1964) says, theorizing has novel responses as its behavioural correlate. The academic study of planning thus provides stimuli for innovation, an observation which can certainly be made of American planning.

Theory has already loomed large in Perloff's essay on planning education published after the closure of the famous Chicago School (Perloff, 1957). Benjamin A. Handler's seminar report "What is planning theory?" (1957) is another example of the concern of academics for developing this field. In recent years, Henry C. Hightower's (1970) review of the teaching of planning theory is highly instructive of the level of sophistication which has apparently been reached during the sixties, though he still reports lack of consensus on the subject-matter and the approaches to be taken.

Throughout the years, one or the other framework for "theory of planning" has been offered such as Lawrence L. Haworth's "An institutional theory of the city and planning" published during the same year (1957) as

Handler's report on that seminar at the University of Michigan. Handler's own contribution appended to that report, arguing for basing planning theory in economic theory, is another example. But of the papers building on the academic teaching of planning theory, Paul Davidoff and Thomas A. Reiner's "A choice theory of planning" has gained the highest reputation of all.

This is a normative theory of planning. On the basis of a series of postulates derived from economic analysis, and of philosophical assumptions concerning the purpose of planning, they suggest how the planner ought to proceed. Particularly noteworthy is their treatment of facts and values in goal-setting.

Davidoff and Reiner were subsequently challenged by John Dakin (1963). Points of contention were whether a theory of choice coming from economic theory was adequate to cover all aspects of planning, whether planning should aim at proceeding in a fully rational manner, whether the time was ripe for developing a general theory of planning such as the two authors had demanded, and whether theory ought to be so general as to explain planning under whichever political ideology.

Dakin insisted, for instance, that the role of intuition and experience should be acknowledged and that too much explicitness had its dangers. Davidoff and Reiner (1963) retorted by saying that ". . . intuition or experience unsupported by reason are weak reeds on which to rest".

They linked this with their belief in the essentially democratic nature of scientific planning, thus also answering the point about planning under different ideologies: properly conceived, it is *not* the servant of whichever power cares to employ planning. Scientific planning requires democracy: ". . . because of the need for value determination in science (in regard, for example, to the criteria and measures to be employed), a scientific decision model must resemble a democratic decision model."

Davidoff and Reiner put forward an elegant argument. However, some comments are still needed. These concern basic assumptions and the conclusions which they draw from them. It is evident that they take the position of *methodological individualism*, i.e. the doctrine ". . . that facts about society and social phenomena are to be explained in terms of facts about individuals" (Lukes, 1970).

For instance, they answer Dakin's point: "The question of whether or not planning is to be regarded as effective is probably not a choice within

society, but only as between one society and another. The cultural pattern of our society decides for us that planning is an effective kind of behaviour" in a way which shows their methodological assumptions saying that a ". . . social decision emerges as human beings . . . decide . . ." (Davidoff and Reiner, 1963). Thus, they in effect deny theoretical status to such collective concepts as cultural pattern. One is reminded of Durkheim's argument concerning the existence of "social facts", and the split in the social sciences which this has caused ever since.

With their refusal to grant theoretical status to concepts like cultural pattern goes their distaste for anything like the public interest. They clearly build on a pluralist model of society. Indeed, in their paper they use the concept of advocacy, around which Davidoff would eventually write his seminal paper on "Advocacy and pluralism in planning" included later in this reader (see pp. 277–96).

Their assumptions lead them to conclusions with important consequences for planning theory. Their theory can only prescribe how planners ought to operate, it does not explain planning: "We did not intend to present a law of the way planning has, does, or will operate. We do not believe there can be such a law, any more than a single theory of health or justice" (Davidoff and Reiner, 1963).

Apparently, planning itself, when referring to what planners generally do, is suspect as a concept because of the methodological connotations which this has. It is not a foregone conclusion, however, that methodological individualism and pluralist models of society are the only acceptable assumptions on which to base planning theory. I subscribe to Kaplan's (1964) principle that each level of analysis should be granted autonomy of inquiry. Papers included under "positive theory of planning" in Part V show that other writers have thought it perfectly conceivable to make pronouncements concerning the way in which planning operates, thus taking a position opposed to Davidoff and Reiner's.

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A Choice Theory of Planning*

Paul Davidoff and Thomas A. Reiner

PLANNING is a set of procedures. The theory we present rests on this belief. We will analyze the implications of this assertion and then identify the steps comprising these procedures. Further, we will show the bearing of these steps on behavior in fields where planning, as we define it, is practiced. What we have to say applies equally well to such diverse endeavors as urban land use planning, national economic planning, business planning, and others, for the same steps are followed no matter what the substantive or geographic focus.[1]

Planning Defined

We define planning as a process for determining appropriate future action through a sequence of choices. We use *determining* in two senses: *finding out* and *assuring*. Since appropriate implies a criterion for making judgments concerning preferred states, it follows that planning incorporates a notion of goals. *Action* embodies specifics, and so we face the question of relating general ends and particular means. We further note from the definition that *action* is the eventual outcome of planning efforts, and, thus, a theory of planning must be directed to problems of effectuation.

The choices which constitute the planning process are made at three levels: first, the selection of ends and criteria; second, the identification of a set of alternatives consistent with these general prescriptives, and the selection of a desired alternative; and, third, guidance of action toward

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[1] However, the substantive is important and gives a particular instance of planning its special character. We leave a discussion of this point to another time, and focus in this paper on the ground common to all types of planning.

determined ends. Each of these choices requires the exercise of judgment; judgment permeates planning.[2] We will show the need for and some means of rendering judgments explicitly and with reason.[3]

Having introduced the definitional base, we now turn to three sets of propositions that are prerequisites for our planning theory. The first set refers to the subject-matter of planning and the environment in which it takes place, and is offered as postulates depicting the world-as-it-is. The second set of propositions describes the purposes for which planning is employed. We infer the purposes of planning, as defined above, from the uses to which it is put in dealing with the conditions set forth in the first set of propositions. The third set identifies elements which in their interrelation compose the planning act and distinguish it from other forms of behavior. This set is derived from consideration of planning's purposes and the environmental postulates.

The Environment Surrounding Planning

The following set of postulates, describing aspects of the world-as-it-is, rests in part on axioms that have been found helpful in economic theory. The remaining postulates in this set also are statements on which there is general agreement.

1. Individuals have preferences and behave in accordance with them.[4] Actors are to some extent able to order their preferences. Different objects of preference, for any actor, may substitute for or complement each other.[5] Preferences express comparisons between wants: these wants have several features. An actor never experiences complete satisfaction of all his wants. Further, man finds that enjoyment brought on by addition to those goods and services already held pales with possession of increasing amounts.

[2] The judgment basis of decision-making in general is analyzed by Churchman [7]. Numbers in brackets refer to the Bibliography at the end of this article.

[3] We are concerned with the problem, so trenchantly posed by Haar [13], that a major task confronting the planner is to see that he acts in a nonarbitrary manner, administratively as well as conceptually. We develop in these pages a theory of nonarbitrary planning.

[4] Preferences are not absolute, yet they can be measured with tools of probability analysis.

[5] An individual's consumption of fuel would rise with purchase of a car: gas and autos are complementary goods. Use of public transit facilities will decline with the acquisition of a car: these are substitutable entities.

This is the familiar notion of diminishing marginal utility. To say that man is able to order his preferences among all alternatives is an exaggeration. For example, "poverty of desires" may limit his preference field. This problem becomes even more acute where alternative future goal situations are to be compared.

2. Actors vary in their preferences. The fact that men do not appraise things similarly complicates the allocation problem in society. It does so in two ways: the aggregation of individual preferences is sometimes a highly complex matter.[6] Second, there is considerable dispute whether there is any group interest or common welfare other than the sum of individual preferences.[7] It is often possible, however, to group the individuals with similar preference patterns. Such, for example, is the practice of economic determinists as well as of social analysts accustomed to draw conclusions from observation of manifest behavior.

3. Goods are produced and services, including labor, are performed subject to the constraint that diminishing returns set in at a given level. Beyond a certain point, "another buck just doesn't give as big a bang as it used to". This idea corresponds, on the supply side, to the notion on the demand side of diminishing marginal utility from goods and services.

4. Resources are scarce and consequently output is limited. Factors which go into the production of goods and services are, at any one point in time, limited in supply. This is the essence of the problem of priorities; we cannot achieve all things that need doing, or are desirable, at any one time.

5. The entity for which planning is undertaken—be it a production unit or a metropolitan area—will typically consist of interrelated parts generally in flux. Any action has consequences that add additional reverberations to such a system. To describe this condition we use terms such as "network effect", "organic structure", or "the need for coordination".

6. Man operates with imperfect knowledge. He also is often illogical (by formal canons), as where his preferences are not transitive,[8] or where

[6] This is the aggregation paradox analyzed by Arrow [2]. See also Baumol [5], ch. 13.

[7] Meyerson and Banfield [20], pp. 322–9, present the contending viewpoints.

[8] The transitivity assumption appears in various deductive systems. A transitive preference scheme will posit that where an individual prefers X to Y, and Y to Z, he also prefers X to Z.

his several values, at least at the levels at which he perceives them, are in conflict with each other. Thus, his abilities to calculate and control are ever limited. Severe, too, is conflict between demands for immediate action and for non-arbitrary decision. Kaplan [16] has well illustrated this predicament. "We are playing a game in a taxi with the meter running; even though we may possess a theory of the game, the cost of computing the optimal strategy may be too great." Man will doubtlessly continue to operate somewhere in the realm of bounded rationality, rather than reach perfect rationality.[9]

Planning's Purposes

Given these postulates, which describe the environment in which planning takes place, we move on to discuss why the planning act is undertaken. Ultimate purposes cannot be appraised from within a system: there is need to rely on outside criteria to evaluate such ends. We shall limit our discussion to presentation of objectives implicit in planning endeavors.

We refer to ultimate objectives of planning (external purposes), not to substantive matters (internal purposes) such as urban renewal, harmonious land use relations, or most profitable output. What reasons might institutions have for calling on planners to help them achieve their specific objectives?

Planning has been employed for a number of reasons, any one of which can serve independently or in combination with others as the objective of planning. Critics of the direction, efficacy, and value of contemporary planning should recognize the possibility of such a variety of perspectives; they might then see that the means in question are appraised differently for different purposes.

Three classes of objectives seem to exist. The first is efficiency and rational action; the second is market aid or replacement; and the third may be labeled change or widening choice.

1. *Efficiency and rational action.* In a world of scarcity there is a need to conserve resources and also to allocate them in an efficient manner. Planning is seen as a means of reducing waste or producing the greatest return

[9] For example, Schoeffler's [24] is a model of full rationality: Simon's [26] model postulates "satisficing," a more limited concept of rationality.

from employment of resources, although the line between these is not always clear. The distinction may rest on the amount of control that is exercised.[10] Definitions of waste or of optimum allocation hinge on assessment of wants. As we postulated above, different clients have different patterns of preference. Therefore the efficient utilization of resources would be that which satisfied the particular preferences of individual actors—as such preferences are determined and aggregated in a manner accepted in a given society. Efficiency thus is measured in terms of the purpose it serves.

Rationality is sometimes conceived as (a) referring to increasing the reasonableness of decisions, and sometimes as (b) involving full knowledge of the system in question. In the former sense (a) the task of planning may be to provide information to decision-makers, and, in certain cases, to the clients and the public at large about what presently exists and what may be expected in the future under alternative conditions. With this information the actors can better satisfy their own wants. The latter concept of rationality (b) is far more demanding of planning, for it requires identification of the best of all alternatives evaluated with reference to all ends at stake. The alternative thus selected as optimal implies, and is implied by, an efficient course of action.

2. *Market aid or replacement.* Planning would be of little, if any, use for an environment where an open, fully competitive market (either political or economic) operated perfectly. Such a market would imply that both buyers and sellers knew fully the relative worth over time of the items and services they sought and possessed, bought and sold, and of all the alternatives they had. Such a market would also require free entry and each participant's having, as it were, a single vote, with no party exercising monopolistic control over any segment of the market. Although such a market system does not exist, it remains a goal for some purpose: particularly as a model for optimum allocation of sets of goods and services in

[10] Waste itself involves notions of efficiency or optimum output per input. Efficiency, waste, and optimizing are interrelated; fruitful discussion of their relation depends on the particular model or ideal employed. Thus these terms take on one meaning in a competitive market model and quite another in a model which has, underlying, an objective that investments not be retired until their physical usefulness has been exhausted.

response to preferences of participants. Planning may be desired precisely in order to bring the society a few steps closer to such a goal. On the other hand, certain critics deny the possibility of a working competitive market. Their objective is to replace an imperfectly operating market system with some other scheme for distribution of scarce resources in response to claims upon them. Seen from this perspective, planning is to serve a new and controlling system of pricing and distribution.

Either of these objectives seizes on planning as a vehicle which collects, analyzes, and publicizes information (such as forecasts and assessment of third-party costs and benefits) required to make reasoned decisions. Those who favor the use of planning to make the market operate effectively do not see planning as a direct agent of change, but rather as providing the factual basis that will permit various value alternatives to be confronted and tested. Those who seek a market substitute view the planning act as more directly responsible for change. In this view planning becomes a "directive" method that will in itself yield rational order; the planner's task is enlarged to include examining value alternatives and, in some instances, suggesting particular courses of action.

3. *Change or widening of choice.* Given scarcities, social and individual choices must be made about the manner in which resources are to be allocated: how, when, to whom, to what purpose, and in what combination. The pure democratic ethic posits that no one has the wisdom or ability to make decisions for the society or for another individual; choice-making is left to the individual or to a majority of the individual voters.

In today's world, the inadequacy of this position is self-evident. Individuals increasingly delegate decision-making powers to legislative bodies; legislatures delegate to administrative and executive hands. This is specifically clear in the public realm; analogous conditions prevail in industry and in other institutions. Delegation often decreases individual opportunity to choose, but this decrease has limits; the decision-maker can both question and inform the individual client about the issues at hand. The planning process can be specifically employed to widen and to publicize the range of choice of future conditions or goals, as well as of means. This function may be extended to include opening opportunities where choice can be exercised. Lack of techniques and of willingness often holds back urban planners in this realm.

Widening of choice may overlap objectives of rational action. Those choices between alternatives that are central to the rational decision-making model clearly cannot be made in the absence of knowledge about such alternatives. The chooser must be informed of the range of choices and of the implications of each of the choices open. This suggests that the planner ought to render explicit the implications of proposals.

Planning can serve as a vehicle for the portrayal of utopian solutions. As distinct from plans expressing incremental improvements or even large-scale modifications along familiar lines, utopian plans show courses of action or end states involving fundamental change in values or environmental reconstruction. The utopian plan may open choice in several ways. It may give meaning to an old value by placing it in an unfamiliar setting. It may spell out the implications of total commitment to one or more values. It may shake belief in the *status quo* and suggest possibility of change and the directions this may take.[11]

A belief in the possibility of effective planning rests on the assumption that man controls his destiny: either by affecting the rate and direction of ongoing change or by initiating such motion. Planning is often relied on to achieve such control. Many of the reform features of city planning can be traced to a conviction that it is possible to improve man's conditions or to arrest decline.

Planning Characteristics

We next consider those elements which, in their interrelations, characterize the planning act. Though we wish to use these elements to distinguish planning from other forms of behavior, we recognize the considerable overlap between such fields as operations research, decision-making, or problem-solving, and planning.

We suggest the following as necessary components of the planning act.

1. *The achievement of ends.* Our definition of planning incorporates a concept of a purposive process keyed to preferred, ordered ends. Such ends may be directions or rates of change, as well as terminal states. Means

[11] On the relations between utopias and urban planning, see: Dahl and Lindblom [9], pp. 86–88; Meyerson [19]; Reiner [22]; and Riesman [23].

are not proposed for their own sake, but as instruments to accomplish these. The ends are not given, irrevocable, but are subject to analysis.

2. *Exercise of choice.* Planning is behavior which sees—at many levels—values formulated, means established, and alternatives selected. Our definition of planning stresses exercise of choice as its characteristic intellectual act.

3. *Orientation to the future.* Time is a valued and depletable resource consumed in effecting any end. Planning, an end-directed process, is therefore future oriented. Each of the ultimate objectives of planning implies a need in the present for information about the future. Estimates of future states are also important for what they imply for present behavior; thus, points are identified where control is required if ends are to be achieved. Moreover, planning involves assigning costs to deferred goal satisfaction and to losses arising from postponed actions. The task of calculating interest rates thus implicitly incorporates planning.

4. *Action.* Planning is employed to bring about results. It is a step in an ends-means chain leading to that which is desired.

5. *Comprehensiveness.* Planning serves to relate the components of a system. In order to allow decision-makers to choose rationally among alternative programs, the planner must detail fully the ramifications of proposals. In a world of imperfect knowledge this requirement must be balanced with that of action.

The Planning Process

As he faces these realities and concerns, and as he strives to identify appropriate courses of action, the planner engages in choice at three fundamental levels. These jointly constitute the process of planning. They are: *value formulation*, *means identification*, and *effectuation*. They are the necessary and sufficient steps constituting planning. We believe each represents an analytically useful category, for associated with each step are distinct methods of operation and problems of theory.

VALUE FORMULATION

Fact and Value

Our analysis of the value-formulation process and of the planner's responsibilities in dealing with values has as its basis the philosophical distinction between fact and value.

A fact is a descriptive statement involving definitions and postulates, and a relationship. It is an assertion of the truth of the relationship. "X is Y" is one characteristic form of a factual statement.

Values may be expressed as moral statements, or as statements of preference, of criteria, or of ends—more particularly goals. For our purposes, each of these can be related to, or transformed into, any of the others. Moral statements take the form of "X ought to Y", or, in terms more familiar to urban planners, "metropolitan areas ought to be surrounded by greenbelts". Statements of preference take the form "X is preferred to Y", or, "I would rather live in a single-family detached house than in a multifamily dwelling". Statements of ends or goals take the form "X is the end state sought", or, "Our goal in housing is the re-creation of New York as the first major city of the world without a slum". Criteria statements take the form, "when confronted with a choice between X and Y, apply rule M", or "when choosing between possible urban renewal sites, select the one with the highest reuse potential".

We further maintain that a given nondefinitional assertion would belong either to the category of facts or that of values and that any discourse could be divided in this manner. There are, on the one hand, uses, tests, and criticisms singularly appropriate to values and, on the other, those singularly appropriate to facts.[12]

Yet fact and value are closely related. The separation of fact and value in itself requires certain assumptions and possibly violation of the dictates of reason.[13] Let us consider some of the ways in which fact and value may be related.

1. Factual statements and their analysis invariably reflect the values of

[12] The position presented thus far rests on logical positivism, see: Ayer [3] and Carnap [6].

[13] In the last analysis, judgment, choice, and values enter into any verification. On this point, see Churchman [7], chaps. 4–6.

their makers; if only in the importance attached to them or the sequence in which they are studied.[14]

2. Our personal experiences show that our values are colored by our understanding of facts.[15]

3. We can make factual assertions about values: for example, their distribution in a given group. Conversely, one can make value assertions about facts, as does the city planner who desires to counter the fact of public apathy about a public program.

Verification of facts and verification of values, nevertheless, involve different techniques. The definition of a fact requires the possibility of disproving the assertion. Further, the true measures of facts lie on a probabilistic continuum; we cannot be absolutely certain of any assertion. Disconfirming and verifying value statements are highly complex issues that are by no means resolved. How then can the imperative of a value statement be tested? Disagreement on a value position cannot be resolved by recourse to facts.[16] We can speak of verification of values only in terms of their consistency with values of a higher level. Eventually, however, there must be reference to ultimate values which are essentially assumed and asserted as postulates.

The many goals within a system of values can be viewed in terms of their interrelations, although we can at times conveniently focus on individual goals. Considering an individual goal as a part, rather than as the entirety, of a system of ends has important analytic consequences. One goal may appear as superior to an alternative goal when both are measured against a higher value; however, the alternative may appear as a better means of satisfying a system-wide set of ends. This suggests that goals can be compared in terms of both their intrinsic and their instrumental worth. Values exist in a hierarchy. The hierarchical relation of values provides a means for whatever testing of values is possible. A value may be tested, that is, understood and its reasonableness assessed, by specifying values of a lower level it subsumes and by comparing it with other lower-level values as a means to achieve values of a higher level. We emphasize that a given value may be viewed both as a means and an end.

[14] See, for example, Merton [18] and Myrdal [21].

[15] Stevenson [29] gives one formulation of this problem.

[16] This position has been developed by a large number of contemporary philosophers: in particular we find support in Churchman [7].

The planner, as an agent of his clients, has the task of assisting them in understanding the range of the possible in the future and of revealing open choices. He does this in two ways—one involving facts and the other, values. The planner deals with facts to predict the nature of the future. Such predictions take account of a variety of different factors in the environment as well as likely effects of alternative controls. Such predictions permit comparison with conditions that are desired. Knowledge of gaps between desired and predicted conditions may suggest the nature of further controls needed.

The planner deals with values to discover which future conditions are presently desired and which may be desired by future clients. The environment desired for the future is, *in the first instance*, purely a matter of values. There is nothing in the factual side of the planner's work which, *in the first instance*, can reveal to him the desired nature of the future. But once a particular set of values concerning the future is posited, knowledge of facts is needed to determine the relative weight of a particular value. For example, value X might be preferred in the first instance, but subsequent knowledge of the costs of achieving X might lead to heightened consideration of another value. We agree with Kaplan [16] who has written of the importance of "confronting values with facts" in order to make "valuation realistic".

Constraints should be imposed only after choices are expressed. All too often planners first predict the nature of the future, then help set in motion programs that fulfill this prophecy, and thus limit men's aspirations. Planners should not let such predictions about the future limit the range of choice, for controls can alter the future and can make predicted outcomes improbable. However, evidence revealed through prediction can suggest undesirable aspects of a given course of control. Thus, prediction and control are complementary.

We would prefer to see planning operate under the assumption that all things are possible, given the willingness to meet their costs. Only when the client of the planner reveals that the costs are excessive should the future condition be excluded from consideration. If this procedure is followed, the planner's client remains in control.

Responsibility

Although we propose that the planner become vitally involved with values, we must make clear our belief that the planner should act with a keen sense of responsibility. He cannot, as an agent of his clients, impose his own ideas of what is right or wrong. We do not wish to see the planner's influence on decisions limited, but we would argue strongly that the planner's role in dealing with values must be constrained so that he acts as a responsible agent.

If an ultimate objective of planning is to widen choice, and the opportunity to choose, then the planner has the obligation not to limit choice arbitrarily. If an ultimate objective of planning is efficiency, then the planner cannot afford prematurely to dismiss any set of means. An examination of current goal-setting practice would show that planners as a rule fail to reject explicitly alternatives not included within their final plans. Thus, a proposed master plan contains a list of goals, but not a list of rejected goals. Further, such plans seldom indicate why the accepted goals were selected. If the planner is to be permitted to reject alternatives it must be because he has some knowledge or skill that provides a rational basis for such acts of rejection. This basis can be provided only by the values of the clients. Our contention rests on the thesis that goals are value statements, that value statements are not objectively verifiable, and, therefore, that the planner, by himself, cannot reasonably accept or reject goals for the public. This is crucial: we maintain that neither the planner's technical competence nor his wisdom entitles him to ascribe or dictate values to his immediate or ultimate clients. This view is in keeping with the democratic prescriptive that public decision-making and action should reflect the will of the client; a concept which rejects the notion that planners or other technicians are endowed with the ability to divine either the client's will or a public will.[17]

Clients

It is not for the planner to make the final decision transforming values into policy commitments. His role is to identify distribution of values

[17] Another reason for interest in clients' values is that their assessment permits prediction of aggregate private decisions and behavior, and thus leads to more effective planning.

among people, and how values are weighed against each other. To do this, the planner must determine relevant client groups. We can speak of two general classes: the immediate client, or the planner's employer; and the ultimate clients, those affected by the proposals.

The values sought are the clients; we reject the notion that individuals express the values of an institution, or what has been called the organismic view of the public interest. Values are personal; institutions do not hold values and purported expressions of institutional will cannot be proved or disproved. An institution does not have a will separate from that of its members; otherwise, man is the ward of that which he can master and control. Institutions exist to serve man. It is important to state our position explicitly (although ours is not an uncommon one) because of its meaning for the planning process we describe. It implies that the planner should not search for the "interest" of the entity for which he works, be it Philadelphia, General Motors, or the United States.

The planner therefore must take a preliminary step: the identification of his clients. Often, terms of employment prescribe the reference group for the planner's activity. But in public planning, with intervening administrative and legislative levels, to identify clients is a difficult task, and one that is often sidestepped.[18] The failure properly to identify relevant clients lies at the bottom of many of the current difficulties of the urban renewal program.[19]

In some situations the planner's perspective is limited to the values given by his immediate client, for his employer may exclude the planner from what might be deemed a political area. When the planner is permitted (or, as is frequently the case, asked and urged) to study the larger client group, serious problems confront him. What type of information should be elicited from the clients? Should the planner study the values of a random sample of the population, or should he classify the relevant population and then sample the different groups, or should he otherwise assign values to these aggregations? If he has chosen the second course, the planner will be required to establish explicit criteria for the definition of groups.

[18] Likewise, is management or the stockholder the immediate client in a corporate planning situation? See *Dodge* vs. *Ford Motor Co.*, 204 Mich. 459, 170 N.W. 688. See also, operation research literature, viz. Churchman, Ackoff, and Arnoff [8], chap. 1.

[19] As documented by Gans [12] and Seeley [25].

One such criterion should be to aggregate individuals expected to have similar cost-benefit expectations.

Clients might thus be grouped according to income, race, age, occupational characteristics, location, or by roles in various institutions. Any one individual might fall in several or all such categories. Just as we deny an institutional will, neither shall we find a group interest. That which expresses the values of a majority of a group need neither represent that class's permanent view nor the views of each member.

Analysis of Values

Let us now identify what information about the values of clients should be sought and analyzed. Values are not self-evident, simple entities, but, though complex, neither do they defy analysis. The planner should consider values from two perspectives: first, as the clients' internal states of valuation: second, externally, as the entities which are valued. It is easy to slip into a position where internal and external values are not distinguished, where the preference structure of an individual is not separated analytically from the commodities, services, or conditions which are the objects of his preference. We may find that for some purposes value analysis should concentrate on the internal states, such as those previously discussed, while, for other purposes, study can more fruitfully focus on the external. As one proceeds from more general to more specific values, the external elements seem more evident, dominant, and measurable.

To lend substance to our discussion of internal states, let us focus on values such as health, wealth, and power,[20] which might be considered values at a middle range of generality. These values should be considered in the following ways.

1. For a given value: how widely is it held? What is its spread and distribution in the institution and amongst client groups?

2. What is the intensity of the value? Techniques of measurement are not sharply developed here. The only meaningful intensity scale may be

[20] We sidestep the question of the selection of these values; they are taken from Lasswell and Kaplan [17] who offered these as part of a plausible value system.

one measuring overt behavior, for example, migration. It may also be desirable to distinguish between those values held in private and those shared as when attitudes are publicly voiced or voted. The planner might be particularly concerned with identifying conditions under which privately held values become public. This is related to whether a value is strongly held by an individual, or whether he is amenable to changing it.

3. Does the individual believe he can or cannot influence the achievement or a goal?

What are the characteristics of the external value entities? The stock of such things as wealth or health that an individual possesses at any one time, in combination with his internal values, provides a significant basis for planning analysis. An individual's well-being is measured by:

(a) his absolute stock of valued entities;
(b) divergence of his stock from his own goals (his aspirations); and
(c) divergence of the stock of valued entities from a level set by others (this is the familiar notion of standards).

The difference noted in (b) and (c) need not be equal.[21] For purposes of analysis, information on both gaps is desirable. A criterion for planning action would give a directive to narrow either the subjective gap, the objective gap, or some combination.

Valued entities can be measured in several ways. First, regarding the amount held or desired: is possession a 'yes-no' phenomenon, does it exist in discrete lumps, or is it measured along a continuum?[22] Second, how easily is the valued item transferred from person to person?[23] Third, along the continuum which measures the individual or social origin of a value: is the valued entity internalized, or is it other-directed?[24] Fourth,

[21] For example, the political theorist asks: Can freedom be measured objectively, or is it purely a subjective state? Or, in the urban planner's world: How is adequacy of municipal services to be measured?

[22] Survival might be in the first category, days at work without interruptions due to illness in the second, and degree of health in the third.

[23] Wealth has low transfer costs, whereas health or rectitude have high costs of transfer.

[24] Thus, affection may be totally other-directed, whereas, depending on market conditions and assumptions, wealth is only partly so. Health is largely internalized, although not exclusively so: subjective well-being reflects knowledge of others' states, and identification of well-being hinges partly on publicly held criteria.

measurement of valued objects also must embody recognition that some are not subject to restrictions of finiteness.[25]

Planning analysis of an entire value system would lead to portrayal of value hierarchies. It is by study of such structures and by defining the levels therein that it is possible to identify, reduce, or even eliminate the inconsistencies in pursuit of a system of goals. With knowledge of the hierarchy, the planner can better pinpoint specific means.

Ideally, for purposes of planning analysis, value hierarchies should be formulated to provide criteria for specific action or inaction in all cases. We recognize that this sets a highly demanding requirement, for it must account for discord and inconsistencies within and among people. Yet, there are at least three processes the planner may employ to resolve value conflict and efficiently attain plural goals. First, assigning exchange prices to several goals permits their joint pursuit. Second, posing alternatives, analyzing ramifications, and disseminating information contribute to effective bargaining between proponents of contending values. Third, rendering value meanings explicit provides common grounds for appraisal.

Though the planner tries to formulate unitary hierarchies, these may not be attainable, and, in any case, are not desirable in their monolithically consistent form. For there is virtue in highlighting conflict of values and goals: a richer, if only temporary, synthesis grows out of advocacy.

Evaluation of Values

Although a value statement cannot be verified by empirical data, it can be referred to other value statements in the hierarchical structure. Furthermore, implications of values can be detailed to permit greater understanding of their meanings. The process of rendering a value explicit also reveals the way in which the value may be transformed into a goal statement. Let us illustrate the different ways of treating a value by reference

[25] Wealth would be quite finite, given a particular technological and capital context, a pricing system, and a fixed time period. Health may be finite, but only within some of its definitions. It is harder to assign such ceilings to affection (if, however, this were to be measured in sociometric terms, there is a ceiling, a very high one, on interaction possibilities). Justice or skill would seem to defy notions of a maximum, although it may be possible to set a minimum. Finiteness is related to depletability. Thus, commodities constituting wealth are generally consumed in use, while skills grow with exercise.

to a currently popular aim: "It is desirable to maintain the level of investment in, and the output from, centrally located business districts." The transformation of this statement into a planning goal is: "The preservation of the C.B.D." For purposes of analysis, we might begin by defining the key terms in either the moral statement or the goal statement. For example, what is meant by the term "preserve"?[26] Next we would seek the reasons underlying the goal. We could ask what benefits and costs would arise under each alternative. Or, we might observe that the value was related to others.[27] In sum, the process of explaining the possible reasons underlying a value and the possible effects of its pursuit would permit more intelligent choices between such a value and other similarly treated values.

The final product of the value formulation stage of planning should be alternative sets of objectively measurable goals and criteria. Objective measures are prescribed first because they limit the possibility of abuse through arbitrary decision. Second, if an objective of planning action is to achieve ends, then the ends selected must be achievable. Some ends may be unattainable because of their generality, vagueness, or ambiguity. We do not assert that such ends do not have importance in value formulation, but an objectively measurable end must be deduced from them if a specific direction is to be given to planning means. Criteria are employed for choosing the best means to achieve stated ends. Only where criteria are stated in objective form can alternative means be reliably compared, with assurance that the means selected are directed toward the same goals.

We have suggested that value formulation yields alternative sets of goals. This requirement is supported by the following reasoning. We plan in a world of limited knowledge, a world in which facts are probabilistic and values debatable. Under such circumstances "correct" decisions do not

[26] In speaking of preserving a C.B.D., is the implication that the C.B.D.'s activity should be maintained at its current level, or at its current level relative to a certain region as a whole? Or, does "preserve" mean that the older business district should be maintained as a central focus for particular functions: trade, exchange, recreation, etc.?

[27] Preservation of the C.B.D. may be sought in order to enlarge the assessment base so as to permit reduction of taxes. Or, it may be sought out of the belief that scale factors operate which require a central complex as a necessary condition for provision of desired facilities. Both these hypotheses are subject to evaluation and the validity of the initial goal (preserve the C.B.D.) may thus be tested.

exist. The merit of a decision can only be appraised by values held individually or in a collectivity, but such values, as we have pointed out, are not verifiable. In such a situation, the goal for decision-making should be increasing the degree of assurance (of decision-makers and clients) that the choice made was at least as reasonable or more reasonable than any other alternative. This goal is best attained by bringing to bear on every decision the greatest amount of relevant information concerning the ramifications of all alternatives.

In general, if the planner is not to make final decisions (and even where he is delegated the power to make such decisions), alternative possibilities should be explicitly scrutinized. We object strenuously to the current practice in urban planning of excluding all but the selected alternatives from consideration.[28] Even if the planner prefers a single alternative, a preference we believe he should assert as strongly as desired and permitted, he has the obligation to detail objectively and explicitly the meaning and implication of each alternative. We recognize that the planner must exercise judgment as to which alternatives should be considered as possibilities. But this can be done discreetly through explication of the criteria he employs.

Time Perspective of Plans

We have espoused widening clients' choices. The planner, to do so, must offer value alternatives not currently given great weight in society. The planner should be called upon to present tentative objectives—new, radical, or even absurd alternatives. This involves creative and utopian thought and design. The planner can engage in such thought; possibilities for significant societal change are great (although the immediate willingness may be lacking). Significant planned change generally takes a long time. For this reason, a long-range plan should embody consideration of alternatives which set forth values of a higher level and include some which are distinctly different from those currently approved.

A short-term plan on the other hand will suffer from constraints of time and from necessity for action. This being true, it should focus on purposes

[28] Attempts to display alternatives prove worthless where there is a failure to compare the relative costs and benefits of the posed alternatives.

which are fairly certain to receive political approval. The short-range plan must include consideration of values which have been approved and given expression in past programs, for in part it is a plan showing an efficient way of moving into the immediate future. The preparation of the short-term plan thus calls for identification and analysis of currently pursued goals (as they may be found, for example, in explicit or implicit form in budgets and other public documents). Goals in opposition to the accepted ones, when held by those with significant power, must also be given attention.

A middle-range plan (perhaps for a five-year period) provides an opportunity to mesh the extreme points of view regarding societal change which are expressed in the other two plans. Estimates of future conditions can be made with greater assurance than in the long-range plan. There is more accurate knowledge of what may occur under different controlled situations. Alternatives posed in such a five-year plan should be those carrying some commitment to implementation, as opposed to mere intention (such as might set the criterion for inclusion in the long-range plan).

For each of the three plans, a number of methods are available to the planner seeking to identify possible values and value groupings. These methods include: market analyses, public opinion polls, anthropological surveys, public hearings, interviews with informed leaders, press-content analyses, and studies of current and past laws, of administrative behavior, and of budgets. Singly, and more so in combination, these are superior to reliance on planners' intuition or guesswork.

In each plan, the importance of placing value formulation first cannot be overstated, though there is great reluctance in urban planning to start with a search for ends. Even where goal selection is placed first, there is a tendency to underplay this and to return to familiar territory—"survey and analysis."[29] We do not understand the logic that supports ventures in research before the objectives of the research have been defined.[30] Such emphasis on research is premised on an ill-founded belief that knowledge of facts will give rise to appropriate goals or value judgments. Facts by

[29] There is one legitimate and necessary exception: survey and analysis of client values. Study of their shape, incidence, and intensity makes a valid starting point for planning studies.

[30] A practical reason to delay research studies is to avoid unnecessary or unproductive studies. Planning agencies, as is painfully known, are the repositories of many unutilized surveys.

themselves will not suggest what would be good or what should be preferred. To illustrate this point, a factual survey of housing conditions in a given area would not give rise to a value judgment or a goal in the absence of an attitude about the way people ought to live in residential structures.

Values are inescapable elements of any rational decision-making process or of any exercise of choice. Since choice permeates the whole planning sequence, a clear notion of ends pursued lies at the heart of the planner's task, and the definition of these ends thus must be given primacy in the planning process.

MEANS IDENTIFICATION

In the next stage of the planning process, ends are converted into means. The crucial question is: how to proceed, by nonarbitrary steps, from a general objective to a specific program? We stress that the hierarchy of means be deduced logically from ends.

The process of means identification commences once an attempt is made to identify an instrument to a stated end. It terminates when all the alternative means have been appraised in terms of their costs and benefits (as calculated by criteria referring to all relevant goals) and, in certain cases, where the power is delegated, a particular implementing means is chosen to be the desired alternative to achieve the stated purpose. The identification of a best alternative implies a need for operational criteria for such choices.[31]

The most general end and the most specific means represent extreme points along a continuum. The task of deducing from a value the tools for its implementation is not a one-step operation. A particular program may serve either as a means or as an end, depending on its relation to other values, programs, or tasks, and depending on the perspectives of the relevant individuals.

Methods for the identification of means conveniently fall into two

[31] We distinguish decision-making from planning: the former is usually restricted to choices among given alternatives, whereas we see the latter as a process incorporating the formulation of ends, as well as ways of identifying and expanding the universe of alternatives. On decision-making literature see the recent article by Dyckman [11].

categories. The first is the identification of a universe of alternate means consistent with the value. The alternatives identified would be those which were conditions sufficient for achievement of the goal. This is the deductive element of the model, a task which may take the form of identifying all the feasible alternatives, or a finite number, or possibly only one for comparison with existing conditions. The choice depends on the planner's skills, technical as well as creative. At this point, we are not familiar with any rigorous techniques, either in the natural or the social sciences or in philosophy, which would enable us to identify the full set of possible alternatives to the achievement of an end.[32]

Certain steps might be taken to reduce the number of alternatives to be considered, such as the aggregation, into a few representative alternatives, of all the alternatives constituting a continuum or series of continua. Where alternatives refer to policies in a short-range perspective, a useful approach is review and evaluation of the set of programs currently in use, at several levels of operation and in various combinations.

The second task in means identification is the weighing of alternatives identified in the first step. Two types of weights are involved. One refers to the degree to which a given means satisfies the end sought. The other is a probability score: an estimate of the likelihood that the end will be associated with the means employed. At this point, the planner must pay close heed to the subtleties and complexities of causal, producer-product, and correlation relationships.[33] Using criteria developed in the value formulation stage, such weights are attached to each alternative. One alternative may then be identified as superior to others: that is, optimal by preestablished criteria. However, this last step should be taken only if an explicit delegation of power has been made. In all cases there is a clear

[32] The one exception might be some classes of programming: given a set of restrictive constraints, all feasible solutions are implicitly identified. However, two types of problems arise with programming. Programming is not operational or even relevant to many aspects of planning. More important, the approach requires that explicit constraints be set: there often is loss in precisely that flexibility needed for meaningful expansion of the set of alternatives. For a review of programming literature, see Stevens [28]. An excellent recent introduction to this topic will be found in Baumol [5], chap. 5.

[33] For definition and discussion of these terms, see, for example, Ackoff [1], pp. 65–68.

responsibility to reveal to the decision-maker the grounds for selecting the particular alternative.

Legal procedures adopted in our society reject the thesis that ends justify any means; furthermore, means vary in their effects on different client groups. Hence, the process of means identification is politically charged and must be resolved without arbitrariness. The technician has an important role to play in assessing the impact of alternative means. However, the tasks of adopting criteria for evaluation (during the value-formulation stage) and determining finally the appropriate alternatives are not his, unless these functions have been expressly delegated.

The technician should make explicit to the clients all the information he can muster as to hypothetical consequences resulting from adoption of each of the means considered. Two classes of verifiable, nonarbitrary planning techniques are relevant in this regard. These may be labeled "optimizing" studies, and "comparative impact" analyses. The former would select the best solution out of all possible courses of action, given a criterion of "best" and given explicit constraints. The optimizing study itself would identify all alternatives; these do not have to be determined beforehand. Linear programming is such a technique.

Comparative impact analyses have a more modest aim: weighing already identified alternatives subject to some criteria. The simplest form is comparison between the effects of a single improvement, as against maintenance of the *status quo*. An input-output study is an example, provided a rule is added which allows assessment of the merits of the consequent states. Other examples are comparative cost and cost-benefit studies.

At the moment, our means-identification skills are limited. Nevertheless, we can state standards for such endeavors, whether conducted in contemporary handicraft manner or using more sophisticated techniques which may develop.

1. We seek to identify a set of means so related to the given purpose as to include the one that is "best". Thus, the set of alternatives identified by a means-identification effort must not omit one (identified by some other method than that used) clearly superior to the one selected.

2. The alternatives identified must possess certain features of measurability. There must be "success indicators", which, at a later stage, make it possible to assess the effectiveness of means programs.

3. Means identification should be consistent. That is, alternatives

selected as optimal in the pursuit of a goal should be consistent with the alternatives employed in pursuit of another goal, or least inconsistent with achievement of other goals.

4. Finally, we seek to develop mean-identification methods that are manageable, ones that do not burden us with irrelevant and excessive alternatives. Analysis must be possible, and also productive to actors constrained by time.

EFFECTUATION

In effectuation, the third step in the planning process, the planner guides previously selected means toward attainment of goals adopted in the first stage. Effectuation is concerned with administration of programs and with control; it has been discussed at great length, and from various points of view, in administration theory. We limit our discussion to those aspects of effectuation so essential or peculiar to the planning process that a theory of planning requires their consideration.

There is some question whether concern with effectuation belongs in a theory of planning for it can be held that planning ceases with identification of means and is not concerned with their application. This position implies a cleavage separating policy and administration. Such separation assumes that, once commitments are secured to accomplish intended objectives, policy making terminates and administrators carry out the programs. Contemporary administrative thought has strongly undercut this distinction between policy and administration[34] by showing, for example, how administration of a program can lead to unwanted results. Thus, we pose for the planner the role of an overseer, one who aids policy makers by observing the direction programs are given and by suggesting means for redirecting these toward their intended goals. If circumstances are unusual and significant, unanticipated consequences are likely to occur, the planner will suggest immediate reconsideration of goals or means. There are several reasons why the undesired and unanticipated may arise:

1. Administrators consciously or unconsciously redirect programs. This is not surprising where, typically, several bureaucratic levels are involved in implementing an objective. Each of these levels may involve a separate

[34] For a review of this issue, see Simon [27].

set of actors with unique interpretations of facts, ends, and personal responsibilities.

2. Programmatic means are general and in their application to specific areas or individuals may cause injustice. A whole program may be jeopardized where such injustice is sufficiently grave.[35] Variance procedures, for example, represent explicit recognition of the need to apply equity in certain specific circumstances, yet variables may cumulatively thwart program ends.

3. Not every consequence can be predicted. If (previously) unanticipated events do arise (or are later predicted) they may have significant impact. In some cases the impact will lead to pressures sufficient to alter goals or to introduce new controls.

In serving as an overseer of programs the planner's role is analogous to a feedback control mechanism. The ultimate recipient of information is the policy maker, but in some circumstances the planner may be delegated the task of redirecting a program's administration so that it stays on course. Another significant aspect of the planner's feedback role is the storing of information regarding client reaction to programs and to total or partial achievement of various goals. In this fashion the planner performs a value formulation task, understanding contemporary reaction to the world as it is. This coincidence of value formulation and effectuation stages suggest the ongoing nature of the planning process.

Aspects of effectuation actually commence with agreement on goals and criteria in the value formulation stage: in urban planning, for example, with publication of the first part of a master plan. The function we see for the master plan is to set forth basic accepted policies, the goals and criteria of the government. The master plan need not contain details of programs derived during the means-identification stage. But it must include the criteria necessary to control exercise of administrative discretion.

We conceive of the master plan as an amendable document, one that reflects the political consensus at a given moment as to desired change over the short-, middle-, and long-range periods. The master plan serves as an instrument for evaluating and overseeing the use of controls and functions as a yardstick against which progress toward goals can be

[35] The relocation problems arising from urban renewal programs are examples in point.

measured. Ideally, all the controls employed to effectuate a plan could be deduced from the criteria set forth in the master plan, but specific control need not be part of the master plan. The task and methods of deducing controls from the master plan belong to the means-identification stage. Languages such as "in accordance with a comprehensive plan" would mean "deducible from" such a plan.

We have reserved our consideration of controls until this discussion of effectuation because of their importance for action. However, values as to the nature of controls and the criteria to guide their use are formulated in the earlier stages of the planning process. There are many forms of control from which to choose: those that are directed (such as ones relying on immediate impact on identified clients) as well as those that are automatic (as those that depend on the operation of a free market). Both directed and automatic controls may be imposed by strict regulations or by more subtle means, such as influence or prediction posed to fulfill itself. In our society the Constitution and the positive and common laws embody values governing use of controls. Controls may be exercised from many points within a system.[36]

The planner should establish for his clients' consideration alternative criteria in reference to controls. One set of criteria might deal with the location and character of controls and of the planning function. Such a set would resolve for a particular institution the question of whether controls and planning functions should be centralized or decentralized.[37] Still another set of criteria might deal with relations between controller and controlled. Thus, for example, where individual freedom was highly valued the criterion might be: the control employed should be one which achieves the desired end with the least restriction of the prevailing rights of individuals. Other criteria in this set might answer such questions as:

1. What consideration, if any, should be given to those proximately affected by a control? Should there be compensation?

2. Should the accepted limits of control be a function of the purposes it seeks to achieve? Under which circumstances do ends justify means?

3. What rights will be afforded individuals to question or contest

[36] For a thorough study of types, costs, benefits, and other aspects of controls, see Dahl and Lindblom [9].

[37] This question has been debated by a number of urban planners: Bassett [4], Walker [31], Howard [15], Tugwell and Banfield [30], and also Dunham [10].

particular controls? For example, what should be the content and requirements of a public hearing, or under what circumstances could the constitutionality of legislation or legality of administrative discretion be challenged?

The planner, however, does not have total authority and is himself subject to many constraints. Within any institution, forces, some rational, some irrational, are at work affecting decisions; only some of these are subject to the controls developed by the planner. Planning calculations are set against those arising out of market processes and are either challenged or relied upon by power groups with their own interests. Furthermore, a given planning agency often coexists with others responsible for parts or the whole planning process. Thus, a city planning department may work in co-operation (or conflict) with planning divisions of other departments. In a pluralistic society this is inevitable and acts to limit the planner's activities. But, again, it also can contribute to that higher synthesis we saw arising from conflict of ideas and values.

CONCLUSIONS

The theory presented in this paper has numerous implications both for the education of planners and for the role planners play in public affairs, industry, welfare organizations, and other areas. It is our conviction that contemporary urban planning education has been excessively directed to substantive areas and has failed to focus on any unique skills or responsibilities of the planner. Such planning education has emphasized understanding of subject-matter: cities, regions, facilities, housing, land use, zoning, transportation, and others. In fact, the student has had thrust upon him a growing list of courses and is perennially in danger of becoming a Jack-of-all-trades (almost all, but never enough), and a master of none. In a few years on the job he sinks into an uninspired and intellectually blunted administrator-generalist or public relations semiexpert. Planning education, until now, has paid little or no attention to methods for determining ends and relating ends to means. And although some tools of effectuation are studied, their relation to a planning process is largely neglected. The very obvious shortcomings of current master plans reflect both the bias and the inadequacy of their formulators' training.

The back issues of this and other planning journals are replete with self-

conscious consideration of the urban planner's role as a professional. Planners frequently assert their status of a profession and so implicitly claim a distinct body of knowledge and procedures. Is this claim premature?

It has been our intent to set forth a theory of planning complete in the sense that it defines the field, its purpose, its methods, and the constraints imposed on it by its surrounding environment. Though we do not contend that planning is a task which any one individual can perform in its entirety, we do believe that a curriculum can be developed to prepare each planner to engage in the process and analyses described. There would have to be much reliance on skills and accumulated knowledge in related social sciences, law, ethics, statistics, and applied mathematics. We also believe there is possibility for fruitful exploitation of the common ground between planning and such new fields as operations research and decision theory. However, it should be noted that operations researchers, in their quest for optimal processes, have shown relatively little interest in formulating goal alternatives, and that decision-making theory has largely focused on ways to make the best choice from among given alternatives in response to set criteria. The task we have outlined for planning clearly transcends these in scope.

Attempts are currently under way in a number of universities to teach aspects of planning theory. However, no school has, as yet, focused on planning methods. Our conclusions suggest that, at least for the present, departments of planning should be separated from departments of subject-matter, for example, urbanism, regionalism, welfare programs, industry. Planners should be trained to apply their methods to a variety of subject areas, though any given institution may have to limit its scope to one or a few such areas. We do not mean to suggest, though, that a planner's education should ignore study in subject areas. Rather, we urge that such areas become the testing ground for the application of planning.

Our colleague Britton Harris recently wrote in these pages [14] that "at least for the moment there can be no theory of city planning which is wholly divorced from a theory of cities, and hence no wholly general theory of planning as such". We have taken up his call for reaction to this thesis, and hope that the discussion will continue. We have arrived at a different conclusion. In the long run, we would assert that procedures and substance cannot be treated separately. For the present, the need is great for widespread attention to planning method.

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