29. How plans work

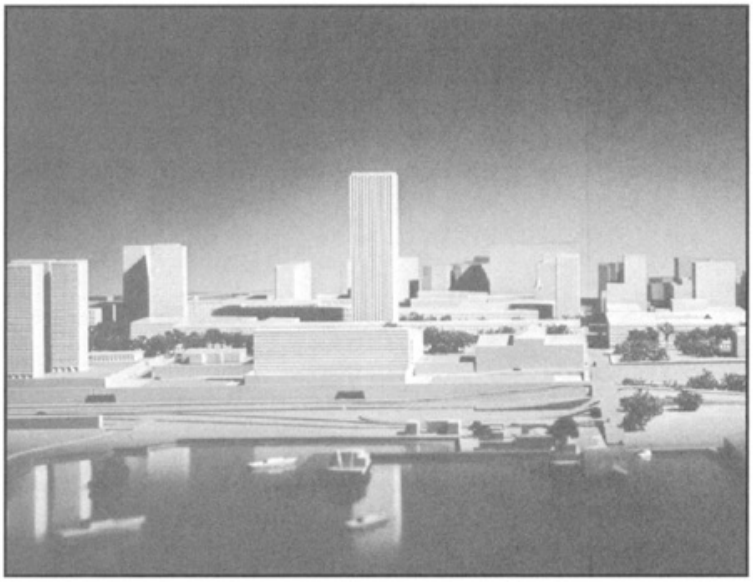
29.1. **Summary**

This article considers how plans work and thus what plans are and how one can assess their success, Explanations of how plans work identify relationships between the attributes of plans and the effects that plans have. They thus identify what plans can achieve. Any one plan can work in one or several ways, which means that these are not categories for classification of plans but different mechanisms through which plans affect the world, Terms defined include *agenda, policy, vision, design* and *strategy*.

29.2. **Key words**

agenda, capital improvement program (CIP), design, maps, plans, planning, policy, regulation, strategy, vision

Figure Vision and design for redevelopment of downtown Cleveland. I.M.Pei and Associates.



In the United States city planning is essentially a process of vision and survey, push and pull, barter and sell, education and exhortation, diplomacy and expediency, courts and juries.

—Walter D.Moody (1919), What of the City?

The plan here given is a program of improvements calculated to cover a period of many years. The order in which improvements are made, and when, is not so important as that each shall be so done as to fit into its place in the general plan.

—Harland Bartholomew (1924), The City Plan of Memphis, Tennessee

The free and easy meeting of problems as they arise will no longer suffice, and more than ever officials are looking for a solution of current problems in terms of the predictable future.

—Robert A.Walker (1950), The Planning Function in Urban Government

It is the intent of the Legislature that public facilities and services needed to support development shall be available concurrent with the impacts of such development.

—Florida Statutes 163.3177(10)h, adopted in 1985

How do plans work? Through what mechanisms or casual processes do plans affect actions? How can we explain why a particular plan is likely to have particular effects? As Moody, Bartholomew, Walker, and the Florida statutes quoted above demonstrate, plans can work in more than one way and planners have, for a hundred years, explained how they expected plans to work. These explanations do not provide precise predictions of what will happen in specific situations, but they do make sense of what we observe and enable us to talk about what we should do. This article considers how plans work and thus what plans are and how we can assess their success.

29.2.1. Agendas, policies, visions, designs, and strategies

Table 1 summarizes five different ways in which plans work: agendas, policies, visions, designs, and strategies. The definitions stipulated here are necessary to avoid the ambiguity of many meanings of "plan." For each distinct meaning, a word is used having a dominant connotation close to the narrower definition, even though the word may also be used to refer to other concepts. These words also have wider and richer meanings in related fields, such as the use of the term "policy" in policy analysis. To paraphrase Wildavsky (1973), if a word can mean everything, it can only mean nothing.

29.2.1.1. *An agenda is a list of things to do.*

An agenda works by recording a list to remind us what to do, or to share publicly a commitment to do these things. Agendas work when there are too many actions to remember or when there is benefit in gaining trust among people affected or legitimating actors as accountable. Publishing or publicly advocating an agenda serves both as a memory device and a commitment. We write down an agenda for a meeting so we will remember to discuss the intended issues. An agenda also implies repeated efforts to accomplish something. Agendas may merely list independent actions that only come together because someone chooses to focus on them at the same, or nearly the same, time. Once created, a Capital Improvements Program (CIP) or budget may function as an agenda. It keeps a record of a list too long to remember and known to be within the budget constraint set by projected

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revenues. Citizens who know that an item is on or not on the Capital Improvements Program list find some creditability in the assumption that it will or will not be built within a particular time. In this explanation, each citizen or each city council member is not concerned about any relationship among the projects or any interdependence among the decisions. Deciding on the CIP, however, is a focus of conflict among projects for different departments and different political wards and different interest groups as well as a competition for available budget. The process of creating a CIP is thus working in some way other than as an agenda.

Agendas differ from objectives. Agendas identify issues or actions; objectives identify valued attributes of outcomes. We can check off everything on our list of things to do, but still not accomplish the objectives that led to the list of things to do. We could create a list of measurable objectives but still have no ideas about what actions to take to achieve them. All explanations of plans must contend with the relationships of actions to outcomes and outcomes to objectives.

The items in the agenda of a meeting have in common the timing of decisions at the same meeting and perhaps a common decision maker's authority, but the choice for one item need have no relation to the choice for another. Agendas are of interest to planners because they are a tool that focuses the attention of a constituency, whether an individual, a legislature, a group, an electorate, or the public at large. Setting agendas and pursuing agendas are thus ways of affecting the decisions that will be made. Agendas keep our attention focused on important actions or issues rather then merely on what "comes

across our desk" at the initiative of others. An agenda is one way to focus the attention of decision makers on some decisions rather than others.

29.2.1.2. *A policy is an if-then rule.*

A policy works by automating repeat decisions to save time or by ensuring that the same action is taken in the same circumstances, which yields fairness or predictability. Policies fit situations in which there are many repeat decisions and decisions are costly to make, consistency is viewed as fair, or predictability of repeat decisions is beneficial. For example, if the developer will pay for the cost of the sewer extension, then extend the sewer. This policy would save the costs of making this decision in each case, treat all developers alike, and make development actions predictable. Knowing the policies of other decision makers provides evidence for forecasting their decisions. Policies are distinct from regulations in that regulations change legally or administratively enforceable rights whereas policies identify standard responses for repeated instances of the same situation. If the policy is to grant tax incentives to new industrial firms, then when a new industrial firm proposes to locate in the community, tax incentives should be granted. The policy simplified decision making by deciding once on a decision rule to apply to all situations of the same class (Kerr 1976). Policies work in three ways: saving decision costs, ensuring consistency (fairness), and increasing predictability.

29.2.1.3. *A vision is an image of what could be.*

Visions compel action. Visions work by changing beliefs about how the world works (beliefs about the relationships between actions and outcomes), beliefs about intersubjective norms (peer group attitudes about good behaviors), or beliefs about the likelihood of success (raising aspirations or motivating effort). A vision could be interpreted as a normative forecast: a desired future that can work if people can be persuaded that it can and will come true. Visions, however, focus first on the outcome and then on the possibility of actions to attain this outcome. Henry David Thoreau expressed it this way in the concluding chapter of Walden: "If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them." Visions are useful in situations in which they can change beliefs and thereby change investment actions, regulations, or activity patterns of residents. Visions are distinct from target designs, which are focused on a feasible solution to a complex problem of interdependencies. Visions work by their effect on beliefs, not by their feasibility of construction.

A vision can help overcome resilience in a system. Resilience dampens feedback that would give immediate responses to actions we might take. Lack of feedback makes intentional action both difficult and risky. If you are trying to change the attitudes of one ethnic group about another ethnic group, resilience is a hindrance. Even interventions that might change attitudes eventually with sufficient time or effort might not yield visible results in time to keep the effort going forward. The effort will then be stopped even though it might have succeeded eventually. A vision can help to motivate continued effort.

Guttenberg (1993) describes a "goal plan" approximately equivalent to this idea of vision: "The image is credible, it bears some relation to existing opportunities in the region, but apart from its ability to persuade, to move people by its attractiveness, it includes no explicit measures for ensuring that these opportunities will be realized" (p. 190). "The purpose of a goal plan is more to state a desired objective persuasively than to plot a course of action for the intervening years" (p. 193).

Graphic and verbal descriptions of future situations—social utopias or beautiful cities—have been developed for centuries, and "visioning" is a currently popular tool in urban planning. Visions can reframe problems by describing the present and its relationship to possible changes in a different way. Visions also describe what the world will look like after proposed changes occur. Literature on strategic planning for corporations—Bryson's (1995; Bryson and Crosby 1992) extension of this literature from hierarchical organizations to "shared power worlds"—use visions in all of these ways.

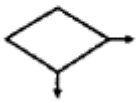
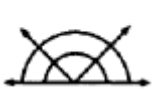
The Chicago Plan of 1909 is a familiar example of plan as vision. It included both graphic renderings of a physical vision and verbal descriptions of the characteristics of a great city.

In creating the ideal arrangement, everyone who lives here is better accommodated in his business and his social activities. In

bringing about better freight and passenger facilities, every merchant and manufacturer is helped. In establishing a complete park and parkway system, the life of the wage earner and of this family is made healthier and pleasanter; while the greater attractiveness thus produced keeps at home the people of means and taste, and acts as a magnet to draw those who seek to live amid pleasing surroundings. The very beauty that attracts him who has money makes pleasant life of those among whom he lives, while anchoring him and his wealth to the city. The prosperity aimed at is for all Chicago (Burnham and Benett 1909, p. 8).

The Portland 2040 Plan also uses images of the implied future to sell its less palatable actions (Metro 2000). Planning for small towns often focuses on "visioning," a collaborative effort by a large portion of the town's citizens to follow a process fairly similarly to the corporate strategic planning process (Howe *et al.* 1997). The Atlanta 2020 Project used a visioning approach (Helling 1998).

Table 1 How Plans Work

Aspect	*Agenda* 	*Policy* 	*Vision* 	*Design* 	*Strategy* 
Definition	List of things to do; actions, not outcomes	If-then rules for actions	Image of what could be, an outcome	Target, describes fully worked out outcome	Contingent actions (path in decision tree)
Examples	List of capital improvement projects	If developer pays for roads, then permit development	Social equality, picture of beautiful city	Building plan or city master plan	Road projects built depend on how much land development occurs when and where
Works by	Reminding; if publicly shared, then commitment to act	Automating repeat decisions to save time; taking same action in same circumstances to be fair	Motivating people to take actions they believe will give the imagined result	Showing fully worked out results of interdependent actions	Determining which actions to take when and where depending on situation when actions are taken
Works if	Many actions to remember and need trust among people affected	Repeated decisions should be efficiently made, consistent, and predictable	Can raise aspirations or motivate effort	Highly interdependent actions, little uncertainty about actions, and few actors involved	Interdependent actions by many actors over long time in relation to uncertain events
Measures of Effectiveness	Are actions on list taken?	Is rule applied without constant reconsideration, or is rule applied consistently?	Are beliefs changed as evidenced by beliefs elicited directly or revealed in actions?	Is design constructed or achieved?	Is contingent interdependence sustained in actions, and is information used in timely fashion?
Cases	Chicago Plan of 1909	Chicago Plan of 1967, Cleveland Policy Report of 1974, Lexington, Kentucky	Chicago Plan of l909, Portland 2040, Washington, D.C. 2000	Chicago Plan of 1909	Lexington, Kentucky 1958, Integrated Action Plans, Nepal

29.2.1.4. *A design is a fully worked out outcome.*

Designs work by determining a fully worked out outcome from interdependent actions and providing this outcome as information before any action is taken. Designs fit situations in which there are highly interdependent actions, actions are easily inferred from information about the outcome, and there is little uncertainty about implementation of actions. We

usually think of design as a process in which many ideas are tested and modified, but entirely in some simulated environment before any action is taken in the real world. Harris (1967) identifies design decisions as reversible at zero cost. All the decisions involved in design of a single building are tested as hypotheses in combination through diagrams and calculations to see how they fit together before any action is taken to construct the building. Designs usually focus on patterns of capital facilities rather than on the human activity patterns that will occur given these facilities. Measures of success should, however, access these human activity patterns.

Design works by figuring out a result for many interdependent actions before acting. It thus avoids the problems of interdependence, indivisibility, and irreversibility through a presumption of perfect foresight. There is no iterative adjustment; the result is determined first so that each action can immediately fit the solution. Bacon (1974, pp. 260–262) illustrates how the design concept breaks down over time in urban design but still results in somewhat coherent physical forms. A complete and coherent design for a section of a city is proposed. Some elements of the coherent design get implemented, but other elements do not because of citizen complaints, budget constraints, changes in government, or power relations. Then, situations change and new designs are proposed that in part relate to the elements of the previous design. Some of the elements of the new design are implemented. The realized urban form results from this sequence of dependent designs, none of which is implemented in its entirety.

As projects become more complex and more easily decomposed into actions that can be carried out separately (*e.g.,* more than one building, phased buildings to be constructed with long periods between each phase), they take on the character of a sequence of design projects linked by strategies about related decisions. Although any architect designing buildings will point out that in many cases the design may be modified during construction and that the cost of design changes is not zero, these costs are small and these modifications are minor relative to the whole design. In larger urban development situations, actions taken at different times are each of similar magnitude, such as building an interceptor sewer now and an expressway later. Modifying the expressway capacity or service area before it is built to complement a sewer system designed to absorb twenty-five years of growth is a different level of relationship from modifying details as a building is constructed.

A design approach solves problems before acting on any decision, whereas a strategy approach decides what action to take now cognizant of related future actions. We do not need to make all related decisions simultaneously, but we can consider potential future decisions before making a decision now. Note that the target creating of design is also different from agenda setting. An agenda is a list of things to do; a target is something to shoot at. A target might prompt an agenda. A strategy might be devised to achieve a target.

29.2.1.5. ***A strategy is a set of decisions that forms a contingent path through a decision tree.***

Strategies work by determining what action should be taken now contingent on related future actions. Strategies fit situations in which there are many interdependent actions under the authority of many actors and occurring over a long time in relation to an uncertain environtnent. In sequential decision making, at the time action is taken on a current decision, the future decisions have been thought through for each outcome from that current decision. Saying that we plan to do something means that we will take certain actions under certain conditions when the time comes. Design and strategy represent the continuum sometimes described between synoptic or blueprint plans and incremental, decision-centered planning (*e.g.,* Faludi 1987). The crucial difference is the degree to which all decisions should or can be taken at once or only sequentially,

Strategy is arguable the most inclusive and thus fundamental notion of plans because it is the most explicit about the relationships among interdependent actions, their consequences, intentions, uncertainty, and outcomes. Strategies address most completely the problems of interdependence, indivisibility, irreversibility, and imperfect foresight. In contrast, designs focus primarily on outcomes. Visions, agendas, and policies are often joint effects of plans that also work as strategies or designs. Visions, policies, and agendas, as explained earlier, can also address situations that do not meet the strict criteria of interdependence, indivisibility, irreversibility, and imperfect foresight.

Plans address spatial phenomena, which is a direct result of interdependence among decisions in space. On the other hand,

policy analysts tend to ignore spatial phenomena and focus on the impacts of individual programs or policies, not on plans for related actions. Analysis for a single decision or for repeat decisions of the same type may benefit from forecasts of impacts, but when interdependence actions can be taken sequentially, the relationships between decisions and forecasts become more complex. Plans working as strategies depend on functional, spatial, and temporal relationships among decisions themselves and their impacts. Policies are distinct from strategies, because policies apply to repeated decision situations of the same kind whereas strategies coordinate different but related decisions. Strategies may yield policies as statements of decision rules, such as "Allow development if the developer pays for the cost of sewer extensions." This policy might implement a strategy of providing sewer infrastructure over time concurrent with development. Plans may be hierarchically related. For example, under California planning legislation, area plans (or specific plans) are subject to policies and strategies set out in general plans (Olshansky 1996). The Chicago plan of 1966 (City of Chicago Department of Development and Planning 1966) set policies for area plans that were developed for each neighborhood.

In contrast to plans, regulations set the rights of a decision maker by identifying what decisions are permitted and by setting the range of discretion of choices and criteria in making these decisions. Regulations are enforced by the state through its monopoly on the use of force. For example, zoning restricts the range of uses, building height, and land coverage that may be undertaken on a particular parcel. A subdivision ordinance restricts the patterns by which land can be divided into building lots. Regulations may be created by private groups under the force of contracts, which are in turn enforced by the state. Thus a homeowners' association may impose design regulations for its members. Regulations affect decisions by restricting the set of choices, whereas plans affect decisions by providing information.

In contrast to regulations, none of the ways in which plans work is inherently binding on actors. Plans that work as strategies set forth contingent decisions that affect choices made now, but there is no current or future change in the range of alternatives from which the decision maker is permitted to choose. The effect on current decisions is only through the decision maker's own assessment of related decisions. Regulations define the set of future alternative from which a decision maker may choose, which can help to determine which decision is best for action now.

Plans also work as a focus of deliberation—discussion, argument, conflict, and resolution. Such work occurs both in the creation of plans and in their use to guide action.

29.2.2. Investments and regulations

Investments in physical infrastructures or facilities and regulations are widely recognized as the two major components of urban development plans (see, *e.g.,* Alexander 1992, 98ff; Neuman 1998). As in political interpretations, these different types of actions imply different tasks for plans (Table 2). Investments, whether by public agencies or private firms, change the capital stock of infrastructure or buildings. Regulations change rights, the range of discretion in making decisions. Plans often include recommendations for enabling legislation from a higher level of government to allow a lower level of government to take certain kinds of actions. Enabling legislation is thus analogous to regulation but is among levels of government rather than between governments and individuals. That we observe this pervasive focus of plans, whether made for governments or private firms or individuals, suggests that we should be able to explain why plans are made for investments in physical facilities and regulations rather than for other types of actions.

The simple explanation is that infrastructure investments, whether by public, private, or joint actors, are interdependent with other investments. They are partially indivisible and subject to significant economics of scale; they are durable, long lasting, and costly to reverse once action is taken; they are subject to imperfect foresight with respect to demand, technology, and related actions. When iterative adjustment does not work, plans that work as designs or strategies can yield improved outcomes because such plans consider other actions before taking an action now. Plans can yield such improvements not only from the perspective of a government, but also from the perspective of a private firm or individual.

Investments in physical facilities mediate between geographic space and people's behaviors. Thus two kinds of decisions matter: the decision to invest in infrastructure and the decisions to use the resulting infrastructure in particular ways. Indicators of quality of life depend on activities on populations, including their interactions with each other; the physical

facilities in which they live and work, including the networks that connect these facilities; and the geographic locations in which these activities and facilities occur. Thus an indicator of vehicle miles traveled per person per day depend on where people who work downtown live and over what type of network they travel, which depends in turn on the geographic character of the site of the city. The important point is that investments occur in fixed locations and they create the physical context within which locational choice and daily behaviors occur. Whether investments are in buildings, housing, schools, treatment plants, or networks, roads, sewers, lightrail transit, they are fixed in place and cannot be moved without great cost. They are built with specific capacities, which cannot be changed without additional investment. Increments of capacity are subject to significant economies of scale. It is less costly per unit of treatment, for example, to build a larger rather than smaller sewer treatment plant. Although a treatment plant may take ten years to site, design, and build, it will still be expected to serve expected demand for a fifty-year life. Thus forecasts of demand for sixty years may be pertinent and must be precise enough to be useful. If demand occurs more slowly or at different densities than forecasted, however, contingent pipe sizes and construction timing should be available as strategy. It is very expensive to replace pipes to increase their capacity, however, so robust strategies for the major pipes in the network may be appropriate.

People choose to live or work in facilities that exist at particular locations because someone invested in the facility at that location. People choose transportation mode and route over a network of streets and transit based on investments made to link locations by roads or transit routes. The outcome of the investment is realized only when the location choice and travel choice behaviors occur. We must therefore estimate these behaviors for given investments rather than trying to estimate the effects of investments directly.

This logic of plans for investments also applies to capital investments by the private sector. Anas*et al.* (1998) give the example of the creation of new nodes in a multinucleated city. In many cases, no one developer has sufficient capital or land to build an entire new center alone. If several developers try to locate new subcenters when only one or two can be sustained, however, then some subcenters will fail. The capital invested will be lost and the underutilized land will displace other uses because of the high cost of conversion. Even the successfully established center will be slower in developing then necessary because some development and tenants will have to move from other failed centers. The private developers have much to gain from figuring out ahead of time which new center will succeed and building there initially. Public infrastructure providers and house buyers would also be affected by the uncertainty of location of new centers.

Table 2 Land Regulation and Implied Requirements of Plans

Regulation Type	*Regulation Logic*	*Implied Plan Logic*
Zoning	Externalities (positive and negative)	Strategy to address interdependence in advance because of irreversibility of investments and indeterminate adjustment process given imperfect foresight
	Infrastructure capacity	Strategy for capacity expansion and design for capacity at buildout because of irreversibility and indivisibility
	Fiscal objectives	Policy for consistent and fair repeated decisions for fiscal objectives
	Information costs or errors	Policy as means of providing information that is collective good or asymmetric between buyers and sellers
	Management of supply	Strategy to reduce infrastructure costs of spatial substitution of uses as technology changes given imperfect foresight
	Amenity protection	Target, permanent allocation yielding strategy of implementation to acquire rights
	Development timing	Strategy of zoning for non-urban uses until land is ripe for development
Official maps	Protect rights-of way	Strategy for rights-of-way because of irreversibility of investments
Subdivision regulations	External effects of design decisions	Policies to achieve design decisions by developer that have collective good external effects
Urban service areas (Urban growth boundaries)	Timing, resource lands protection, "optimal city size"—depending on how changes in area are managed over time	Strategy of efficient infrastructure provision and interaction costs over time; policy of consistent and fair resource land protection; target design of city
Adequate public facilities ordinances	Timing	Strategy of efficient infrastructure provision and interaction costs over time
Development rights (e.g., conservation easements, transferable development rights)	Permanent allocation of land to uses	Target design of pattern of uses among, e.g., resource lands and urban development
Impact fees	Timing, fiscal management, and distribution of costs among current and new residents	Policy for consistency and fairness and strategy for infrastructure financing

Regulations have a structure similar to investments with two kinds of decisions: decisions to regulate and decisions to act given the regulations. A decision to zone a municipality by land-use type and density is a decision to regulate. A decision to build a house in one of these zones is an action given the regulation. Usually the decision to regulate will be collective and the decision to act individual. In order to use regulations, decisions must be made about where to impose what regulations. These decisions are analogous to investments in that they face interdependence, indivisibility, irreversibility, and imperfect foresight. To implement a zoning regulation, we must consider a sufficiently large area to figure out a pattern of land uses that will reduce negative effects of adjacency of different uses and provide access to services. The area to be zoned must be considered in finite increments; it is indivisible. As with investments, regulations cannot, therefore, work by iterative adjustment. If a regulation is to reduce external effects of adjacent land uses, it will be effective only if it is imposed before the

conflicting land uses invest in location next to each other. If a regulation is to match density with infrastructure capacity, it can only be effective before investments are made.

Investments and regulations are logical elements of plans that work as designs or strategies because they are likely to benefit from such plans. Social programs or other actions that are not interdependent, indivisible, irreversible, and subject to imperfect foresight are much less likely to benefit from such plans. For example, state-funded health care would affect quality of life and is worth careful analysis. A housing voucher program may be a valuable public program. Such programs may be on an agenda, may be implemented through policies, or be expressed as visions, but they are not likely to be the focus of a design or a strategy because they do not have the attributes of capital investments or spatially expressed regulations of interdependent actions.

This observation does not mean that such programs are unimportant; it means that instruments different from plans working as designs or strategies are likely to be more useful in achieving the intended outcomes. This observation also does not mean that equity goals or social purposes should not be criteria by which investments or regulations are judged. Regardless of the criterion of success, investments once made are costly to change. It is no more possible to iterate toward a social equity goal than toward an economic efficiency goal if the actions involved are irreversible investments.

Investments and regulations are likely to benefit from plans as designs or strategies because of the characteristics of these types of actions not because of characteristics of particular criteria for evaluating them. A full range of criteria is likely to be and should be considered.

29.2.3. **Determining whether plans work**

Do plans work? These explanations of how plans can work—as agendas, policies, visions, designs, and strategies—provide a means by which to assess whether plans do work. These explanations indicate what we can expect to observe if plans are working and how we can explain relationships among these observations. We can observe:

- **plan-making behaviors**—the things planners and their collaborators do when they make plans,
- **plans**—information available at particular times to particular people,
- **people using plans** while making decisions,
- **investments and regulations** that may have been affected by plans, and,
- **outcomes** in terms of activity patterns resulting from these investments and regulations

All of these observable phenomena provide opportunities for assessment. Here we focus on plans and whether they work, not on how they are made.

There are four broad criteria for assessing whether plans work:

- **Effect:** Did the plan have any effect on decision making, actions, or outcomes? For example, if it was intended to work as an agenda, how many of the listed actions were taken?
- **Net benefit:** Was the plan worth making and to whom? For example, if it was intended to work as strategy, were the gains in efficiency of infrastructure provision over time sufficient to compensate the costs of making the plans?
- **Internal validity (or quality):** Did the plan fulfill the logic of how it was intended to work? For example, if it was intended to work as strategy, did it address interdependence, indivisibility, irreversibility and imperfect foresight in appropriate ways?
- **External validity (or quality):** Did the outcomes intended or implied in the plan meet external criteria, such as claims for a just society? For example, if it was intended to work as a vision, did the vision include equity? Ethical acceptability is a crucial component of external validity.

Several authors have developed such typologies, none of which I follow completely, but some of which share common elements with this typology. Talen (1996) provides a thorough review of this literature and makes a strong case for the importance of assessing plans on the basis of whether they achieve objectives. Alexander and Faludi (1989) discuss the range of possibilities, including conformity of the actions to the plan, rationality of planning process, quality of the plan solution assessed before or after it has affected decisions, and whether the plan is utilized in the decision making process. Others (*e.g.,* Berke and French 1994; Dalton and Burby 1994) consider whether plans that meet standards in the literature or in state legislative mandates are more likely to result in a greater number of implementation tools being in place. More recently, Mastop and Faludi (1997) argue for a "performance" approach, which requires looking at how a plan affects decisions and how these decisions in turn affect outcomes. This casual chain links the plan to outcomes, which is consistent with my argument that we need explanations of how plans work. Connerly and Muller (1993) identify frequency of consultation of the plan by decision makers as a measure of plan quality, which highlights the necessary casual link but does not explain what the expected effects of use should be. Baer (1997) provides a checklist for assessing plans based primarily on the plan as document and the reported procedures by which it was made.

Some of the typologies focus more on what to assess and others on how to assess it. As most of these authors point out, it is very difficult to assess the effects of plans on outcomes and thus on measures of goal achievement. In urban development processes, it is almost impossible to say what would have happened without the plan and compare this to what did happen with the plan. Or, conversely, it is impossible to say what would have been different if there had been a plan. Calkins (1979) developed one of the most complete descriptions of the monitoring of plan accomplishment with respect to time and space. His key concepts are to recognize both underlying trends independent of the effects of a plan and trends caused by the plan.

Note that all of these assessment approaches are distinct from the question of evaluating a particular action in a plan, such as estimating the net benefits of a highway project or choosing between a transitoriented or auto-oriented development pattern. That is, none of the above types of assessments addresses evaluating alternative plans in the process of choosing the content of a plan. Rather, they ask, "Did the plan work?"

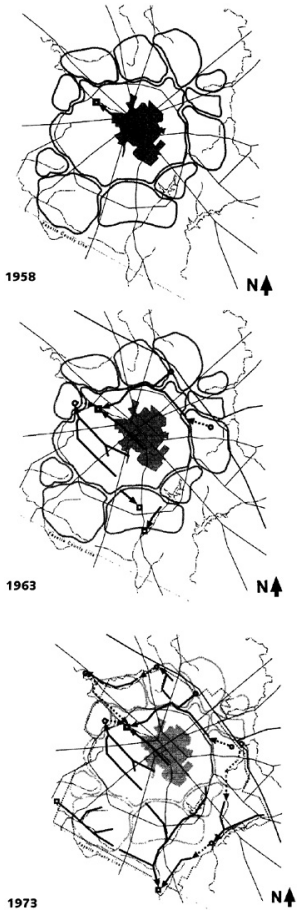
29.2.3.1. *Did the plan have any effect on decision making, actions, or outcomes?*

Plans work by affecting actions, indirectly if not directly. Whether the actions taken yield intended outcomes is a distinct but important question. Good plans must not merely be more likely to affect actions. They must also be more likely to include actions that will yield intended outcomes. Does Chicago "look like" the Chicago Plan? Were the aspirations achieved based on some set of indicators? Does Cleveland "look like" the Cleveland Policy Report in the sense that indicators show an increase in choices for people who are least well off ? Do the new towns of Reston, Virginia, or Milton Keynes in England look like the plans for them? To use this basis, we not only need to be able to measure outcomes pertinent to the plan, but also to provide an explanation of how the plan caused these outcomes. One difficulty is uncertainty in the relationship of actions to outcomes. Even if planned actions are taken, the intended outcomes may not occur. Even good choices in locating land uses relative to flooding or other natural hazards may yield larger losses over a given period than before the plan because of a particularly large flood or a cluster of hazard events. A plan that is based on the belief that people will use transit if they live in a transit-friendly environment may be used in decisions and affect actions but still not gain the outcomes that the plan sought because the belief about how the world works was wrong.

Talen (1996) argues strongly for the value of assessing plans directly in terms of the resulting patterns rather than in terms of actions taken. Rather than focus on the investment or regulation actions, she focused on whether the intent of the plan was achieved, in particular whether the equity distribution sought by a plan for city parks was achieved (Talen and Anselin 1998). If the objective of the plan is to provide parks for neighborhoods or types of households that are currently underserved, then a measure of whether the relative level of service for such neighborhoods and households improved is more pertinent than whether parks were built in the specific locations and sizes shown in the plan. This distinction returns us to explanations of how plans work. Whether the objective of equitable distribution of parks was achieved or not, the question of what effect a plan had on this remains to be shown. On the other hand, if the parks were built where the plan recommended and the plan recommended these locations in order to achieve equitable distribution, then just showing that the plan caused parks to be located in these places is also insufficient.

If the spatial diagram or map in the plan were meant merely to persuade constituencies of the possibility of action with respect to goals, then the specific locations of parks would not matter. The locations would be in the plan as an illusion of precision to achieve persuasion. If, on the other hand, the explanation of how the plan is intended to work is as a set of fully worked out interdependent actions, then the particular locations of parks may be related to transit stops, dwelling unit densities, diagonal pedestrian access routes, and traffic calming street patterns, In this case it matters a great deal whether parks were built in particular places in conjunction with other actions. In this latter situation the assessment of equitable distribution with respect to demographic characteristics is insufficient. The substantive logic of the relationships among actions in the plan matters, and the logic of how the plan might affect action matters.

Figure Policy plan and strategy plan for installation of sanitary sewer, contingent on land development. Lexington, Kentucky, (top) 1958, (middle) 1963; (bottom) 1973.



The 1929 Regional Plan of New York and Its Environs was several years in the making, involved many planners, and took a forty-year perspective. Johnson (1996) takes advantage of the resulting visibility of the planning process and the opportunity to track actions and outcomes to develop a thorough assessment of the effects of the plan. His analysis includes consideration of potential effects of the plan working as vision, agenda, policy, design, and strategy, though not based on the strict definitions and explanations presented here. He points out the difficulties of assessing whether a plan worked as an agenda,

It is difficult to separate forecasts of events that would have occurred, plan or no plan, from events whose occurrence is attributable to the Plan. And what of long-standing proposals that predated the Plan and were simply incorporated into it? To what extent can the fact of their being part of the Plan be credited with their realization? Each specific project or proposal needs to be analyzed as an individual case study if definitive judgments are to be made about the casual relationships of plan and reality (p. 244).

Johnson also identifies difficulties in assessing the effects as policy or perhaps as vision.
For example, should decentralization be encouraged or discouraged? Or, should highways be emphasized over transit? General policy reveals itself in the making of specific decisions, but it is itself subject to modification and influence by plans, among other factors. But the extent to which plans as paradigms influence general policy is usually difficult to ascertain. The plan, if it embodies accepted public policy, can reinforce that policy, but the strength of that reinforcement can only be a matter of speculation. Where the plan breaks new ground or attempts to alter accepted policy assumptions, it may be a simpler task to estimate impact by reference to points at which policy changes. (p. 244)

Johnson compares forecasts in the plan, such as population, to historical outcomes to interpret contingent strategies, though the plan itself did not identify such contingent strategies. He also reports which major projects were accomplished and which were not and computes percentages of open space projects completed by subregion, but as he argues, casual explanations linking these outcomes to the plan are difficult to construct.

Even a case study as detailed and thoroughly observed over several years as the traffic reduction scheme for Aalborg Denmark (Flyvbjerg 1998), however, still faces some of these difficulties. Flyvbjerg's interpretation centered on the power of certain actors to oppose parts of the plan on which he focuses his narrative. He interprets the inability to implement all of the interdependent elements of this scheme because of powerful opposition as a plan failing in the face of power.

The proposed scheme in the plan he analyzes, however, contradicted the logic of interdependent actions of major capital investments made just before the plan was adopted. The plan's failure might be interrupted as the success of a previous plan that withstood the attempt to change it. Incomplete implementation of one plan is not generalizable as evidence that plans do not work.

Each of the ways in which plans work implies an explanation of how a plan affects the world and thus an assessment based on that particular explanation. The measure of effectiveness for an agenda is whether the tasks were accomplished. We may also be able to observe whether actors or citizens, to sustain the implied commitment to the list, referred to the agenda as a reminder. Such observations would be evidence that the actions occurred because of the plan and because it served as an external memory device.

For policies, there are distinct measures of success for its distinct purposes. For decision efficiency, the measure of effect is whether decisions were made by reference to the policy rather than by considering the next decision situation from scratch. Reference by decision makers to the policy may be observable. Or, the policy may become habit and therefore not be directly observable, even though conformance with policy can still be observed. For decision fairness or consistency, the measure of effectiveness is whether the policy was applied accurately in similar situations. This can be determined by assessing a sample of situations in which the policy should have been applied.

Observing beliefs of the plan's target audience before and after the plan and asking whether beliefs changed can assess the vision mechanism. Beliefs might be elicited directly or inferred or revealed in actions. To determine whether these changes in beliefs also changed actions as intended would require observations of actions. Without observation of changes in beliefs or inference of such changes, however, we could not tell whether a plan was working as a vision.

For designs, the measure of success is whether the design is constructed or achieved. This measure of conformance has been used in several plan effectiveness assessments (*e.g.,* Alterman and Hill 1978). It is generally not linked to a particular mechanism of how plans work, but rather a general notion of linking the plan directly to the outcome. Note that because the design mechanism is directly associated with the outcome, there is no intervening measure. The presumption is that we can recognize the outcome as resulting from the design because the design is sufficiently distinct that the outcome would not otherwise have occurred by chance. If design is not the mechanism by which a plan is expected to work, however, then conformance alone is not a sufficient measure of effect.

For strategies, the measure of success is whether the contingent strategy was pursued. Use of the strategy may or may not result in the most likely outcome being achieved. So for this explanation, the conformance measure is not directly pertinent.

Finally, it is important to distinguish between lack of plans and lack of action. In Kathmandu, Nepal, people lament the lack of

planning, but there are actually many plans. There is a lack of action, in part because of severe budget constraints, and a lack of certain types of land development regulations. It is the lack of investments and regulations that people often mean when they say there is a lack of planning. These plans may have identified actions that were logically linked to good outcomes, but they are not good plans because they fail to consider whether any actor could take these actions. Or, if the plans are explained as visions, then they may be working, though slowly, by changing people's beliefs about how an urban settlement works and what other people believe is worth doing or feasible to do.

One can determine whether a plan worked by linking these observable phenomena:

- Was the plan used? Or, a plan is good because persons use it in choosing actions.
- Were the actions taken? Or, a plan is good because the actions implied by the plan were taken.
- Were the outcomes achieved? Or, a plan is good because the outcomes sought by the plan were achieved.

The combination of these three types of observations can yield a persuasive argument that a plan affected decision making, actions, and outcomes in turn. They can test an explanation of how plans work and thus provide generalizable implications for other similar circumstance. Whether the outcomes were and still are valued and ethical is a question of external validity discussed below.

29.2.3.2. *Was the plan worth making and to whom?*

Even if a plan is shown to have effects on decision making, or outcomes, it may not be worth the cost of making the plan. There is so little empirical evidence of the effects of plans, that it seems unnecessary to consider whether the effects compensate the costs. The question must be acknowledged, however, and effects should be identified in ways that might allow comparison to costs. Measuring the costs of making plans is conceptually straightforward. Measuring the benefits from the effects of plans, which might be negative, is a minefield of difficulties.

Helling (1998) reports a cost-effectiveness study of Atlanta 2020 collaborative visioning project. She assumes that the vision, the results of the process, and the process of creating the vision should somehow affect actions, which is consistent with explanations presented here. She concludes that the plan was relatively ineffective at anything other than increasing the interaction among participants, which might eventually have indirect effects on actions. She also estimated the costs for creating the vision at $4.4 million. These costs were carefully calculated as opportunity costs of resources used, including the opportunity cost of the time contributed by the twelve hundred populations. With no identifiable direct effects on actions, was the plan worth this cost? If it is intended to work as a vision, it might have changed beliefs, but not yet affected actions. Changes in beliefs are difficult to measure at best. In either case, costs matter. We can at least ask whether the benefits are plausibly greater than $4.4 million.

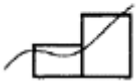
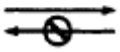
To value the effects of a plan requires considering all the ways in which the plan might work, distinguishing effects of the plan from what would have happened anyway, and estimating the value of these benefits. Uncertainty confounds these aspects further. Clearly the value of the benefits is different across individuals and groups and raises all the problems of assessing changes in social welfare if we take a collective perspective. Even from the perspective of a particular institution, such as a sanitary district planning for sewers, the estimate of benefits is problematic. In practice, the most practical way to ask whether a plan was worth making is to estimate the costs of making it and then ask whether it is in rough terms plausible that the benefits could justify these costs. That is, it is unnecessary to estimate benefits any more precisely than whether they are greater or less than the costs. Thus Helling's example is an excellent model for addressing this question not just for the vision aspect of plans but for all aspects.

Figure *Policy plan diagram of proposed capital improvement projects providing park elements to serve and structure each neighborhood and to reconfigure the lake front. (Adapted from City of Chicago, Basic Policies for the Comprehensive Plan of Chigago, August, 1964, p.41.)*

29.2.3.3. *Was the plan internally consistent with the logic of how plans work?*

Internal validity depends on attributes of the plan itself. The internal validity of a plan can be determined by looking only at the plan. As with any decision in the face of uncertainty, the question is whether a good plan was made given the information available when it was made, not whether the outcomes that resulted were good outcomes. The typical approach is to ask whether a plan contains a certain set of components, such as transportation and land use, or has a particular set of attributes, such as being organized for reference by decision makers. A more careful interpretation would ask whether a plan fulfills at least one of the logics of how plans work. For the strategy aspect of a plan: Are the actions linked together in contingent strategies that meet the logic of decision analysis? Or for the design aspect: Are the elements combined into a designed target configuration that works, in which the interdependent elements should function as intended?

Table 3 The Four I's

	Interdependence 	*Indivisibility* 	*Irreversibility* 	*Imperfect Foresight* 
Definition	Result of action A depends on action B.	Size of increment of action affects value of action.	No action available to return to previous state without cost.	More than one future is possible.
Examples	Value of land (or road) depends on road access (availability of land).	Road linking two locations must be complete and of width sufficient for vehicles.	Road cannot be relocated or resized without cost.	Jobs could increase at various rates and at various locations.
Implications	Actions are not separable.	Continuous marginal adjust-ment is not efficient or not possible.	History and dynamics matter.	Uncertainty cannot be eliminated.
Responses	Consider effects of combinations of actions.	Consider the sizes of changes.	Consider interdependent actions before taking action.	Consider uncertainty of actions, outcomes, and values.
The qualities of *interdependence, indivisibility, irreversibility* and *imperfect foresight* that characterize circumstances in which plans can improve outcomes.				

Kent (1964, p. 91) identified the attributes of a general plan:

Subject-Matter Characteristics. The plan:

(1) Should Focus on Physical Development

(2) Should Be Long-Range

(3) Should Be Comprehensive

(4) Should Be General, and Should Remain General

(5) Should Clearly Relate Major Physical-Design Proposals to the Basic Policies of the Plan

Characteristics Relating to Governmental Procedures. The plan:

(6) Should Be in a Form Suitable for Public Debate

(7) Should Be Identified as the City Council's Plan

(8) Should Be Available and Understandable to the Public

(9) Should Be Designed to Capitalize on Its Educational Potential

(10) Should be Amendable

These are characteristics of a plan, not of the process by which it was created or the effects it had on the world. They are internal validity criteria. Some of these criteria can be derived from explanations of how plans work and thus argued to measure internal validity in this stronger sense. The "Four I's" argue that plans should focus on physical development (Table 3). A plan for physical development is sufficiently difficult and sufficiently independent from other municipal functions that it makes sense to have a plan that focuses on physical development only. Long range is probably too narrow an interpretation, but the concern with time horizons is pertinent because it recognizes that a set of interdependent actions may occur over

time. The focus, however, should arguable be on multiple time horizons pertinent to particular sets of interdependent decisions. “Comprehensive” for Kent implies comprehensive across physical elements, comprehensive in scope of effects considered, and comprehensive in covering the entire municipality. Kent argues that it should be general in focusing on major policies and major physical design proposals rather then details. These claims are consistent with focusing on those projects that, because of the Four I’s, are likely to benefit from the plans. Characteristics 6 through 10 increase the likelihood the plan will be used in making decisions, and thus link these internal validity criteria to the explanations of how plans affect actions and outcomes.

Plans funded by the federal government under Section 701 of the Housing Act of 1954 (Feiss 1985) and state-mandated local plans in several states must include particular elements, presumably because of a belief that good plans must have such elements. California, for example, requires land use, circulation, housing, conservation, open space, noise, and safety (Olshansky 1996). These requirements address both scope of decisions and scope of effects to be considered. Why states should mandate certain characteristics of plans raises a whole range of issues beyond the internal validity of plans. Such mandates demonstrate, however, that decisions about how to plan are made in part on the attributes of plans themselves, not on the way they are made or on the effects they have. Thus internal validity is an important category of criteria.

29.2.3.4. *Did the plan seek outcomes that are ethically appropriate through means that are ethically appropriate?*

A plan that seeks to achieve equity for the least well off is a better plan than one that seeks to increase the efficiency of urban development in a way that the efficiency gains accrue only to the most well off. Without elaborating ethical claims here, it is clear that a plan can affect decision making, actions, and outcomes, yield benefits sufficient to compensate its costs, be internally consistent in its logic, but still be a bad plan because of the goals it pursues or the means it employs. External validity calls a plan to the standards of ethics.

Keating and Krumholz (1991) assessed the effects of downtown plans by comparing six plans based in large part on whether they tended to accomplish what those who initiated and supported them intended to accomplish. Did the plans affect outcomes? They applied criteria from Sedway and Cooke (1983) who argued that plans for downtown development are worth making if there is support of major property owners and tenants, support and cooperation from all departments in city government, a citizens advisory committee, and a citywide plan within the downtown plan can be set. These criteria are predictive of whether a plan is likely to yield benefits to those who fund it that are sufficient to compensate its costs. Keating and Krumholz found that the six plans they studied all fit the Sedway and Cooke criteria. They were plans of a type that we expect to occur because they were initiated by landowners, business leaders, and local government, all of who can benefit from downtown development. These actors have incentives to produce these types of plans that are focused on decisions they can make and benefit from. None of the plans, however, dealt in a significant way with equity, which was predictable given who initiated them. The plans failed an external validity test on a prescriptive criterion of equity.

If one can explain situations in which plans are likely to be made and likely to work based on the first three broad criteria—effect, net benefit, and internal validity—then we can prescribe situations in which planners who measure success as plans affecting actions, and at costs that are compensated, should make plans. Such plans and planning are likely, however, to achieve what is easy and normal, not to accom plish unusual changes such as improvements in social equity. All four criteria—including external validity—are thus pertinent to evaluations of plans.

29.2.4. Summary: plans work in particular situations

Plans can work in more than one way. Given explanations of how plans work—explanations that link observable phenomena—it is possible to assess to what extent plans work in particular situations with respect to their effects, their net benefits, their internal validity, and their external validity. These explanations can also be used to predict that plans that meet these evaluation criteria will, in general, work in these ways in appropriate situations. They thus provide a basis for predicting what plans will be worth making. Plans for urban development often include agendas and policies as means of framing the actions

implied by the plan. The vision, design, and strategy aspects of a plan are most pertinent, however, to figuring out the substantive logic of a plan for urban development and thus precede these agendas and policies. The fundamental reason for this precedence is that visions, designs, and strategies address interdependence among actions while agendas and policies do not. The strategy aspects of plans must also face uncertainty and thus forecasting, which leads us to an interpretation of plans through decision analysis. ■

Figure Strategy plan diagram for Taylorville, Illinois.

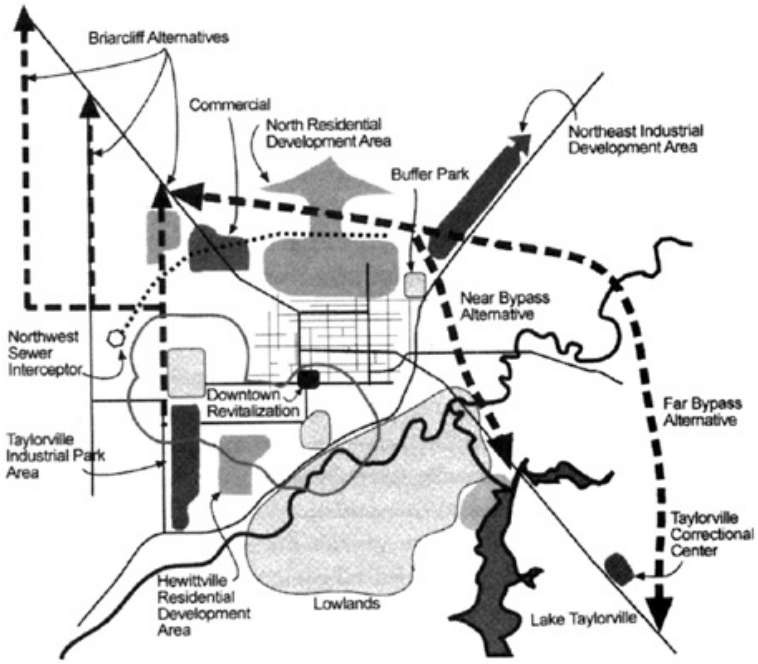


Figure Chicago Plan 1909. Daniel H.Burnham and Edward H.Bennett, The plan provided an agenda, a vision and a design.

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