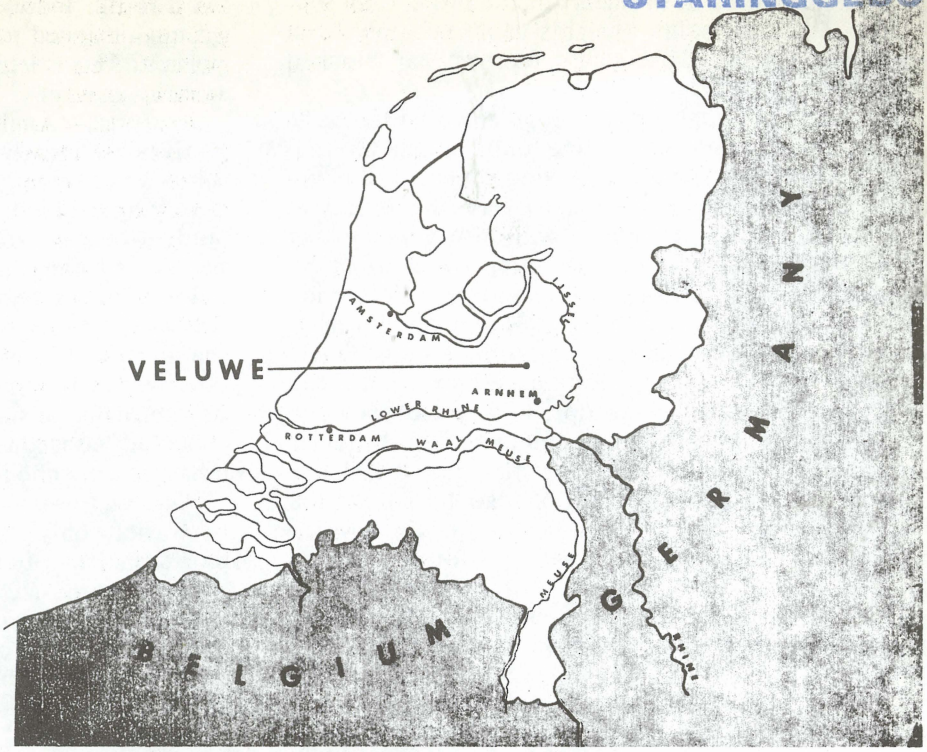


Figure 1. Location of Holland's Veluwe region.

Land-Use Planning:

A VIEW FROM HOLLAND

J. Alan Wagar

ABSTRACT—Participation in a Dutch planning study suggested that public resource decisions require input from at least five groups: diverse specialists, interest groups, analysts, plan builders, and decision makers. Integrating these inputs requires emphasizing meanings rather than details, careful distinction between facts and values, and a defensible hierarchy of values. A computer mapping technique for identifying and defining alternatives is described.

Land-use problems that seemed fairly simple just a few years ago have become increasingly complex. Populations and capacity to modify the environment have grown enormously, and expertise from an increasing number of specialists is needed to avoid unforeseen and undesirable side effects from our actions. At the same time, the growing numbers of people affected by each planning decision are demanding a voice in such decisions. A better understanding of planning is needed to develop concrete procedures that are appropriate amid this increased complexity.

In looking at planning, as in looking into a forest, it is often possible to see additional detail by changing viewing points. During 1973 and 1974, I had such an opportunity to re-examine land-use planning. I spent the year in Holland setting up and applying analysis procedures for a planning study of the Veluwe region, which comprises a quarter-million acres in eastern Holland (*Figure 1*). The Veluwe region contains most of Holland's forests and is subject to the many land-use conflicts one would expect in the world's most crowded country. Parts of the area are wanted for a national park, for mass-use recreation, for military maneuvers, for agriculture, forestry, housing, and water filtration.

The project's difficulties were similar to those encountered in many controversial planning efforts here. Although Holland has some excellent planners and planning agencies, the study team of about 30 people consisted almost entirely of specialists who had begun collecting data before study objectives were clear. Little attention had been given to the kinds of decisions that would be based on the data, and many participants did not even know who had legal authority for making decisions. As a result, much energy was used in collecting data unsuited to decision making.

During a redirection of the study, two of us were assigned to develop and apply a new set of analysis procedures. My colleague was Jan Brouwer, a young Dutch landscape architect who took his Master's de-

gree in planning at Harvard. Our responsibilities as analysts placed us at the heart of the project, an outstanding vantage point. Insights came not only from achievements but from many factors that blocked progress.

We began our analysis by recognizing that the basic purpose of planning is to define and evaluate alternative courses of action for achieving some set of benefits. For public resources, the overriding objective must be to provide the public with high levels of net sustained benefits—"net" indicating the amount by which advantages outweigh disadvantages. Protection of selected resources, rather than being an end in itself, is a means for insuring that benefits are sustained.

Unfortunately, benefits for one group often mean disadvantages for other groups. A key part of planning, therefore, is to develop land-allocation strategies for gaining some sets of benefits with the least violence to other sets of benefits. This philosophy guided the Forest Range Environmental Study (*3*), which provided an extremely useful example for the Veluwe study team.

In working for a year to re-orient the Veluwe study, we found three interrelated tasks on which planning can fail:

Defining appropriate roles for the various participants in planning.

Achieving effective interaction among the various role groups.

Establishing a defensible hierarchy of values.

Defining Role Groups

If public planning decisions are to integrate the knowledge of diverse experts and the inputs of diverse segments of the public, at least five groups of participants must be recognized, each with a different role. These groups are: subject-matter specialists, interest-group members, analysts, plan builders, and decision makers.

Subject-matter specialists.—For help in identifying the probable consequences of selected actions, plan builders and decision makers usually need to draw upon the expertise of diverse subject-matter specialists—each well informed on matters that others might overlook. Examples would include soils specialists, wildlife specialists, plant ecologists, and economists.

Interest-group members.—When the consequences of alternative actions are well understood—which is seldom the case—people usually continue to disagree as to which sets of consequences are most desirable. As a result, individuals often join together in interest groups designed to advance values they consider important. This is legitimate and even essential in a democratic society.

Analysts.—Analysts are needed to ensure that objectives are clearly specified and that efficient procedures for achieving these objectives are developed. By clarifying the kinds of decisions that will be based on a study's results, analysts can specify the information needed and can often reduce wasted effort by identifying information and detail that should not be collected. Additional skills for analysts may include sampling, mathematical and statistical analysis, and computerized data handling. The analysts' final products will normally be summaries of such information as the expected consequences for specific activities and management schemes.

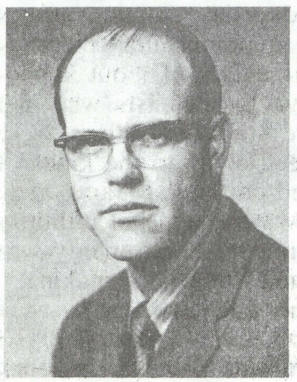
Plan builders.—The term "plan builder" is used here not only to avoid the overtones of authoritarianism often associated with "planner" but also to emphasize that the design of alternative arrangements and procedures is only a part of planning. Plan builders can come from such diverse disciplines as landscape architecture, geography, engineering, and systems analysis. Their challenge is to translate abstract data into plans for concrete action. Good plans will include strategies for capturing opportunities while avoiding disadvantages. This is a design problem requiring the creative integration of diverse pressures, conflicts, and opportunities. From the nearly infinite set of combinations generated by differing land capabilities, conflicting public desires, and management possibilities, plan builders must develop a few alternative physical arrangements and management procedures for consideration by decision makers. As we have learned from recent experience, these alternatives must define a broad array of options so that choices are not forced in preselected directions.

Decision makers.—Decision makers are the people who are accountable for the results achieved when plans are implemented. Only those persons so accountable have the final responsibility and authority for making decisions. All others in the planning process are in the position of making recommendations to or bringing pressure upon the decision makers. For planning involving broad public interests, decision makers will normally be elected officials, their top appointees, or civil servants who have been delegated authority by specific legislation (*1, 2, 5*).

Interaction Among Role Groups

Because the roles in public planning range from highly specialized experts and diverse interest groups to public officials with broad responsibilities, some participants normally pull apart instead of together. Such conflict is perfectly legitimate and must be addressed, but efforts at resolution may get hopelessly sidetracked by false issues.

To keep a planning effort from getting sidetracked, it seems essential to set up a study team headed by a small guiding group that controls the structure and operation of the study and stays in frequent contact with all participants. In the Veluwe project, many difficulties arose simply because basic issues were not talked out early. The guiding group may also need continuing



THE AUTHOR—J. Alan Wagar wrote this while Leader, Environmental Interpretation Research Project, formerly maintained by the Forest Service, USDA, in cooperation with the College of Forest Resources, University of Washington, Seattle. He is currently Leader of the Recreation Research Project maintained by the Forest Service in cooperation with the State University of New York, College of Environmental Science and Forestry, Syracuse.

Plantations of Scots pine (Pinus sylvestris L.) *in the southern part of Holland's Veluwe region.*

contacts with interest groups and decision-making authorities.

Whatever their original backgrounds, members of the guiding group will serve primarily as analysts and plan builders. They need to understand both the political-administrative arenas in which public decisions are made and the diverse technical and interest group inputs required. They must also understand the forms that information must take to be meaningful to decision makers and citizens' groups.

Three general approaches can help a planning effort stay on track: (a) convince specialists of their appropriate roles, (b) emphasize meanings rather than detail, and (c) distinguish between factual matters (what is or can be) and value preferences (what ought to be).

Acceptance of Appropriate Roles

Unless specifically told otherwise, a specialist may mistakenly perceive his role as making planning decisions. In the Veluwe study, for example, some specialists thought their task was to work from the inside to protect threatened biological values rather than to provide an information base that plan builders and decision makers could use in weighing *all* known consequences of the alternatives.

The problem was partly resolved by discussing legal and administrative frameworks that specify what officials and bodies actually have decision-making authority in Holland. Several specialists persisted in their deep distrust of planning authorities, however, largely because of the poor record of such authorities in recognizing noneconomic values. Some specialists remained convinced that planning errors result more from perverse planning philosophies than from inadequate information. However, most recognized that their best opportunity for affecting planning was to identify potential values and losses in terms plan builders and decision makers could comprehend.

Meanings Versus Details

To be comprehended by plan builders and decision makers, diverse technical data must normally be presented to emphasize meanings rather than details. One reason ecology has become so important recently is that it focuses on essential relationships between the parts of an entire system rather than details within a narrowly defined subsystem. Traditions of specialization make this heresy, however, and most experts are under continuing pressures to be comprehensive within the bounds of their respective disciplines. Given free rein, specialists on a study team may therefore collect great amounts of descriptive detail that do not bear upon planning decisions. For example, for the

Table 1. Impact-management-cost table format.

		Activity A				Activity B				Activity C, etc.
		On-site		Off-site		On-site		Off-site		
Zone	Relative importance	Impact	Management opportunities & costs	Impact	Mgmt. opp. & costs	Impact	Mgmt. opp. & costs	Impact	Mgmt. opp. & costs	
1	1	3	0	3	0	4	0	3	0	
2	5	2	0	3	0	4	0	4	0	
3	7	1	0	4	0	2	2	2	0	
4	3	1	2	2	3	3	0	3	0	
5	9	2	1	3	0	1	1	2	1	
—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	

small ponds of the Veluwe area, the limnologist identified over a hundred species of water fleas and diatoms and made numerous chemical analyses. Some species and tests indicated extremely pure (oligotrophic) waters, a rarity of considerable scientific interest in Holland. But few nonbiologists could draw such inferences directly fom the data. During discussions of how to present data, the limnologist was asked what impact a campground would have if built 200 meters from an oligotrophic pond. She readily answered, "It would be disastrous!" Alerted to the uses to be made of her data, she classified all ponds into four categories that summarized both scientific interest and vulnerability and were readily understandable to the nonbiologist.

Emphasis on meanings is also important for communications involving interest groups. Public planning decisions are increasingly being opened to citizen participation in which members of diverse interest groups can express their opinions and expect to influence final decisions. A key problem, however, is to ensure that such opinion is as well informed as possible and is based on a realistic understanding of the consequences to expect from the choices actually available.

In the Veluwe project, maps were used to display the spatial distribution of vulnerability to, and suitability for, selected land uses.

Facts and Values

The growing demand for public participation in decision making seems to be based primarily on disagreements over values rather than facts. The distinction between factual matters and value preferences is essential but has often been overlooked. In the past, planning at many levels often depended strongly on the design professions, where professional expertise in matters of taste and value judgments is highly respected. And, in an era of rapid technological advance, it is often assumed that nearly anything newly possible should be done. As a result, many specialists have not distinguished between what is or could be (a factual matter) and what should be (a matter of value). As land-use pressures increase, conflicts are inevitable. To avoid losing high-value options to those of lower value, a defensible hierarchy of values must be established.

Defensible Values

Values are difficult to handle because they depend on personal judgments, and such judgments differ from person to person. The search for an absolute and universally acceptable ranking of values is therefore futile. Nevertheless, decisions must be made, and these will favor some values at the expense of others. Thus some collective expression of relative value preferences is essential.

The marketplace provides one collective expression. The dominance of market forces in western society has influenced perception to the point that monetary values are often considered real and all others questionable—hence the continuing search for ways to express recreational, esthetic, and other values in monetary units.

To regain clear perspective, it is desirable to look closely at the usual monetary view of values. Instead of being "real" and absolute, each price is simply a negotiated compromise among a number of buyers and sellers who may have widely differing personal opinions concerning the true worth of whatever is being marketed.

Especially for things that are abundant, market prices may be less realistic indicators of worth than the personally held and often emotionally based values they represent. For example, reasonably fresh air is essential for life but is free. However, as negotiated compromises and collective expressions that provide a relative ranking, market prices are usually much more useful to decision makers than the varied and conflicting judgments that underlie them.

Although the market system is not well suited to decisions involving such collective benefits as public education, environmental quality, and the range of options to be passed on to future generations, it shows the crucial importance of negotiation. To provide alternatives to market-determined values, other arenas are needed for negotiations among conflicting forces. Two such arenas are the political process and the judicial system. Both usually lack the speed and the put-up-or-shut-up tidiness of the marketplace. But both are increasingly being used to affect public planning.

Public participation is also relied on increasingly by many agencies. By systematically bringing together representatives of conflicting interest groups, planning and decision-making bodies can create their own arenas for negotiating defensible hierarchies of values.

Negotiation of relative values by public participation does not produce the clean rankings of the marketplace or the authoritative stamp of either the political or judicial process; losers are free to seek the reversal of disagreeable decisions in other arenas. The key tests of public involvement are (a) that it permit negotiation, the seeking of mutual advantage, and compromise, and (b) that it be conducted with such fairness that interest groups seldom seek reversal in

other arenas and are seldom successful if they do. So conducted, public participation can guide management decisions "in directions that are reasonably consistent with what the general society seems to consider its best interests" (*4*).

Techniques

The conceptual problems of a planning study must be resolved before techniques are chosen. Such delayed emphasis on techniques helps avoid the "rule of the tool," which is readily illustrated by giving a small boy a hammer: immediately his world is comprised of surfaces that need hammering. Given a "tool," the planner or manager may also rush into applying it before developing a conceptual framework to determine whether it is appropriate.

In the Veluwe study we knew that decision makers would need good information on likely consequences of various patterns of land use and management. We also knew they would need this information in a form highlighting not only areas with special values but also those where specific land uses could be imposed with the least damage to important values. In addition, we knew that much of the information would have to come from "best professional judgments" by various specialists rather than from detailed surveys and studies that would take years.

We wanted analyses to answer such questions as, "If we take Action A, what consequences can we expect for each part of the region?" Or, "If we must allocate a given acreage to use X, where can we do it with the fewest undesirable consequences?"

Knowing the kinds of information needed, the kinds available, and the ways it should be organized, we were ready to select or develop our techniques. As our major tool, we selected the GRID program developed by David F. Sinton at Harvard's Laboratory for Computer Graphics and Spatial Analysis. This program is nicely suited to manipulating and displaying data so as to summarize, by geographic distribution, the consequences to expect if a specific land-use pattern is applied to a region. The program gives the user complete control over all manipulations of the data and uses a line printer to generate maps.

To organize data for easy manipulation, we developed a format called the "impact-management-cost" (IMC) table (*Table 1*). Each group of specialists divided the study area into zones, and each zone became a line in one of the IMC tables. An example of a zone would be a timber type.

For each zone, specialists rated importance (scale of 1 to 9) and then defined impacts (both on-site and off-site) and management opportunities for each land use contemplated for that zone. Importance ratings were most applicable to such things as rare species and habitats. Impacts were coded at five levels: very negative, negative, neutral, positive, and very positive. Management opportunities were coded as 0 to 6, with 0 meaning no known procedures for reducing impacts. Numbers 1 to 3 indicated that management of low, medium, or high cost, respectively, would create a one-class improvement in impact (as from negative to neutral). Numbers 4 to 6 indicated that low, medium, or high cost management would create a two-class improvement in impact (as from neutral to very positive).

The zones mapped by each group of specialists were digitized and put on computer cards. This was done by "cells," with each cell being 250 by 250 meters (6.25 hectares or approximately 15 acres). The IMC tables were also put on computer cards.

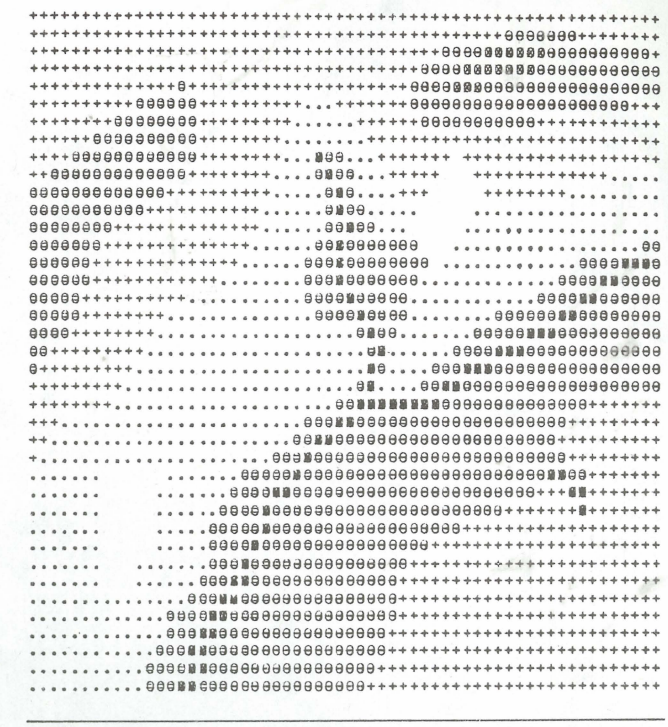


Figure 2. The GRID program can generate maps that use various shades of gray to show how various areas would be affected by a proposed land-use strategy.

All this put us in a position to generate maps on the line printer of a computer, with different levels of information shown in different shades of gray (*Figure 2*). For example, black was used for the most negative impacts, with lighter shades indicating lesser impacts. Maps could be very specific, such as those for the impact of a water filtration project on rare plants. Or we could generate summary maps, such as the impact of water filtration on timber production, songbirds, large mammals, and recreation. Impacts could be weighted by importance, so that a severe impact on an unimportant zone would not be rated as more damaging than a more moderate impact on a zone of great importance. We could also identify the options created by management investments at selected levels.

Because information was displayed by area, plan builders were provided with a basis for designing land allocation and management strategies for gaining advantages with the fewest disadvantages. ■

Literature Cited

1. Boyer, W. W. 1964. Bureaucracy on trial: policy making in governmental agencies. Bobbs-Merrill. Indianapolis, Ind. 184 p.
2. Driver, B. L. 1970. Some thoughts on planning, the planning process and related decision processes. *In* Elements of outdoor recreation planning (B. L. Driver, ed.), p. 195-212. Univ. Microfilms, Ann Arbor, Mich. 316 p.
3. USDA Forest Service. 1972. The nation's range resources—a forest range environmental study. Forest Resour. Rep. 19. 147 p.
4. Wagar, J. Alan and William S. Folkman. 1974. The case for small groups: public participation in forest management decisions. J. Forestry 72:405-407.
5. Wise, Harold F. 1970. The state-of-the-art of comprehensive planning. *In* Elements of outdoor recreation planning (B. L. Driver, ed.), p. 225-234. Univ. Microfilms. Ann Arbor, Mich. 316 p.