Rationality Types in Evaluation Techniques

The Planning Balance Sheet and
the Goals Achievement Matrix

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Abstract

There is a strong tradition among planners to conceive of their task as one of inserting rationality into public debate and decision-making. The article examines how Morris Hill and Nathaniel Lichfield tried to develop the goals achievement matrix and the community impact evaluation (the planning balance sheet), respectively, as rational ex ante evaluation techniques for transport and land-use planning. Special attention is given to the ways in which they modify the economic rationality of the cost-benefit analysis. Furthermore, the techniques are assessed against the need for economic efficiency achieved by instrumental (means-end) rationality, dialogue and participation achieved by communicative rationality, and non-cycling planning recommendations achieved by consistency (transitivity).

Acknowledgements

Introduction on rationality

The purpose of the article is to examine to what degree the procedures of two celebrated ex ante evaluation techniques (1) are in line with the consistency requirements and the means-ends efficiency of instrumental rationality and (2) facilitate involvement from various interests in such a manner that communicative rationality can be approached. As Alexander (2001:1) says, "(t)he association between evaluation and rationality as giving reasons…is just as significant as the link between evaluation and the means-ends logic of rational choice".

The two techniques dealt with here have had considerable impact on evaluation practice in the planning of land-use and transport. The debate between Morris Hill and Nathaniel Lichfield was probably the most important exchange of opinions on the logical and practical design of evaluation technique from the late 1960s up to Hill's death in 1986.1 A number of evaluation techniques were launched in this period, most often as a reaction to the rigid economic reasoning of the cost-benefit analysis. Variants of weight-ranking techniques resembling the goals achievement matrix (GAM) and disaggregated approaches similar to the planning balance sheet (PBS) are still in use, and they are still receiving some scholarly attention. A book in honour of Morris Hill has been published (Shefer and Voogd 1990), and a book honouring Nathaniel Lichfield is planned for 2002 (Edwards forthcoming).

Morris Hill presented the goals achievement matrix in 1966, and Nathaniel Lichfield presented the planning balance sheet in 1956. Even though the PBS developed into the "community impact evaluation" (CIE) when environmental impact assessment was incorporated, most of the original methical elements are retained (Lichfield 1996). The GAM seems to have acquired status as the prototypical weight-ranking technique, attractive to planners who do not feel at ease with economic reasoning. The CIE, on the other hand, appeals to planners who feel that the cost-benefit approach has something to offer, but needs to take equity into account and find a way to incorporate non-priced consequences (Shefer and Kaess 1990).

The techniques are used in various ways, and I will be most interested in variants simply ranking some or all of the consequences of the plan. Such rank-based or ordinal evaluation techniques are also included in recent textbooks. Patton and Sawicki (1993:Ch.8) present an example from Stokey and Zeckhauser (1978) to explain how evaluation can be based on ranking in combination with quantitative technique. Parkin (1993) links the evaluation of plans and projects to public participation, and his survey of analytical aids to judgement includes the techniques analysed here. Moreover, ranking technique finds new applications in environmental planning (Rossi and Kuitunen 1996), group decision-making (Ngwenuama and Bryson 1999), and in combination with optimizing technique (Jiang and Sinha 1990).

To readers familiar with the planning literature, the statement that planners feel an obligation to be rational will come as no surprise. As observed by John Friedmann (1987:97):

> "If there is one theme that runs through all the discussions and debates on planning, it is that of rationality. Whether you argue in favour of planning or against it, sooner or later you end up with the question of whether and to what extent planning is or can be

> "rational"...Because of their belief in the possibilities of rational action, planners lean heavily on the scientific nature of their calling. This belief accounts for their ambivalence toward politics as an alternative to calculation."

The calculation versus politics theme is important and points to tensions between instrumental and communicative rationality in public decision-making (Sager 1990).

There is a communicative, democratic, and dialogical side to the planning enterprise. As is well known, there is also a calculating, analytic, and instrumental aspect. If planning is an exercise in rationality (as is often claimed), these two role aspects seem contradictory. Nevertheless, they both search for a "rational" basis of the planning process relying on communicative and instrumental rationality, respectively.[2] Since the calculating and analytic side of planning procedure was traditionally seen as the more prestigious, ideas of instrumental rationality − unbounded and bounded − have guided the profession. The main purpose has been to convince the politicians and the public that the recommended plans combine and use means so as to maximise or at least satisfice the achievement of ends. Recent accounts of bounded rationality are offered by McFadden (1999) and Jones (1999).

Economic rationality is a type of instrumental rationality, and two approaches are prominent in the economic literature (Sen 1987). The consistency approach assumes that the rational actor is able to express his or her preferences. For any pair of choice alternatives, the actor should be able to tell if the one is better, worse, or just as good as the other. Several other consistency claims could be added, for instance, transitivity: If alternative A is preferred to B and alternative B is preferred to C, then A should be preferred to C. Consistency conditions can be combined with the second approach to economic rationality, which assumes that a rational actor pursues his or her self-interest. This is the familiar "economic man" approach based on utility maximisation. It can be argued that this second approach implies the first, as the maximisation of utility requires that the actor be able to rank alternatives according to a preference structure. Achieving goals means reaching a higher level of utility, so means-end thinking is implied by economic rationality. These ideas of rationality have probably permeated transport planning to an even higher degree than land-use planning (Wachs 1985).

Both communicative and instrumental rationality require that collective decisions do not cycle. It is not tolerable that an unforced commitment to the logically best arguments in the dialogue can take us anywhere in the choice set. Neither is it acceptable that the means-end analysis of ex ante evaluation generates a cycle pointing to any of the alternatives in the choice set in turn. Even if the political decision is usually not made on the basis of the evaluation technique alone, the analysis becomes useless as an expert challenge to the viewpoints of politicians when its professional recommendations are arbitrary. Means-end efficiency, (Habermasian) dialogue, and consistency (transitivity) are the three aspects of rationality dealt with here.

Over the last decade, considerable effort has been made to narrow the gap between Habermas′s (1987) critical theory of communicative action and rational choice theory (Heath 2001). Habermas insists that instrumental rationality cannot by itself adequately coordinate social and political interaction. It is in line with this when communicative institutional procedures and cheap talk are built into social choice and games to

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circumscribe decision cycles and multiple solutions, respectively (Johnson 1993). Furthermore, "both theories present almost identical assumptions concerning the requirements for a fair procedure; they both demand equal access to debate, the absence of a powerful agenda setter, unrestrained access to raise and object to amendments and so on" (van Mill 1996:734). The intransitivity problems accentuated in social choice theory spring from its insistence on collective decision procedures with such democratic elements. Hence, unless the open public debate leads to consensus and thus unproblematic preference aggregation, attempts at approaching communicative rationality impede instrumental rationality by increasing the risk of decision cycles, that is, instability and arbitrary results. Several recent contributions in this field argue for the combination of fair preference aggregation and deliberative democracy in order to enhance both types of rationality (Knight and Johnson 1994, Bohman 1998).

The article is organised as follows. The next section shows how instrumental rationality is bounded in the goals achievement matrix and the community impact evaluation. Emphasis is placed on the implications of Hill's reluctance to trade off effects associated with different goals. Then citizen participation is introduced in order to prepare for the discussion of communicative rationality. It is argued, however, that public involvement may be based on both types of rationality. The fourth section examines how well the two evaluation techniques arrange for communication that approaches dialogue between the parties in the planning process. Up to this point the article takes the character of a focused and systematic review of results found scattered about in the vast scholarly literature on Hill's and Lichfield's techniques. New research results are primarily found in the fifth section arguing that the evaluation techniques discussed here cannot guarantee consistent planning recommendations. By an analogy with Kenneth Arrow's general impossibility theorem of social choice, the differences between the CIE/PBS and the GAM are examined, and it is found that Lichfield's procedures best arrange for the combination of consistency and fairness. The last section offers some conclusions on rationality in ex ante evaluation.

Bounded economic rationality in ex ante evaluation

This section examines how economic rationality is bounded in the goals achievement matrix (GAM) described by Hill (1968, 1973) and the planning balance sheet (PBS) explained by Lichfield (1971) and Lichfield et al. (1975). Developments of the techniques are taken into account, see Shefer and Tsubari (1990) in Hill's case and Lichfield (1994, 1996) regarding the community impact evaluation (CIE).

Cost-benefit analysis (CBA) is a common practice both in transport and land-use planning. When comprehensive, it maximises welfare with a given distribution of income. This economic analysis is well suited as a starting point for my comments, because it is in essence an operational version of "the rational model of decision-making":

- The projects to be analysed are identified.
- All the effects, both favourable and unfavourable, on the society are identified.
- The effects are forecast for each year up to the planning horizon.

- Monetary values are assigned to the effects to give impacts, where this is feasible. Favourable impacts are registered as benefits, unfavourable ones as costs.
- The discounted net benefit (and the benefit/cost ratio) is calculated, and the recommendation is made on this basis.

Several evaluation techniques were put forward as a response to the alleged weaknesses of the CBA. One important difficulty, which is peculiar to economic method, is to calculate the monetary values of the effects. If it is not feasible to assign prices to all the significant effects, the analysis will not be comprehensive, and then it is not rational to make a recommendation on the basis of the CBA alone.

In the PBS, the links with the theory of welfare economics are loosened, and this is even more so in the GAM. Both evaluation techniques are designed for planning situations where conflict between groups is a manifest and important feature of the planning process. Such planning cannot neglect transfers, ignore redistribution problems, or choose "efficient use of the economic resources of society" as the single important evaluation criterion. The PBS and the GAM respond to conflicts in local planning in very different ways. Lichfield reacted to this problem by sometimes proposing individual-level analysis for adversely affected groups and by designing the PBS as a technique for presenting all the consequences of a plan on an equal footing in the same tables, without applying an algorithm for identifying the "best" planning alternative. Hill responded by recommending extensive weighting of goals and even weighting of groups according to age, income, occupation, residential area, and so on, depending on the characteristics of the plan. The weights were to be determined from attitudinal or behavioural studies or they were assumed.

Individual level analysis brings distribution effects into the evaluation technique and breaks with the net social benefit calculus of the CBA. The disaggregated presentation rejects the possibility of universal trade-offs which is assumed in economic theory and required for constructing the grand index. Whether Lichfield's disaggregated displays are due to information shortage or to the principle of not hiding important impacts in a "black-box" type of grand index, the practice bounds economic rationality. The reason is that there is no guarantee that the planning alternative giving maximum economic welfare will be identified by studying the balance sheets. This is confirmed by Lichfield (1996:171), stating that "(t)he fact that the conclusions and recommendations from CIE cannot aim at *optimizing*, and must be content with *satisficing* and *second best* solutions, introduces considerable scope for judgement".[3]

The CIE implies a community welfare test as well as a series of other tests. For instance, it is tested (1) whether the proposals are feasible in a financial, economic, political and legal sense, and (2) whether the plan is sufficiently flexible and open-ended to cope with unforeseen circumstances (assuming this is at all possible). Hence, there are constraints on the welfare maximisation. The points (1) and (2) above, and several other tests proposed by Lichfield, show that the CIE is a satisficing procedure in several dimensions.

Moroni (1994:98), a recent sympathetic reviewer of Lichfield's contribution, concludes (PBSA in the citation is the planning balance sheet analysis):

"Despite the fact that both PBSA and CIE attempt to suggest the preferable course of action in certain contexts, they do not presuppose (even ideally) that the course indicated is the optimal one for the case in hand. Both PBSA and CIE seem instead to aim more for a *satisficing* outcome...than for an optimal one."

Moroni also suggests "that the outlook and hope of CIE is not so much to offer a technique for aiding *public decision*, as to provide a procedure for fostering *public discussion*" (ibid.96). Monetary valuation is obviously useful when the evaluation technique is aimed at providing a final ranking of policy alternatives. However, providing background information to a public debate differs from this in a fundamental way.

"(W)hile a final ranking requires that the policy-maker's normative views are taken into account (for example, formalized as a social welfare function), democratic debate requires, instead, that citizens have access to factual information which can, as far as possible, be distinguished from normative judgement. In this context, the advantages of monetary valuation and cost-benefit analysis are much less obvious" (Nyborg 2000b:394).

Nyborg goes on to show that valuing the environment in monetary terms is not essential for sound project evaluation. She thus gives a theoretical foundation for the practice of both Hill and Lichfield of including impacts measured in physical units on a par with priced items.

Moroni (1994) analyses the utilitarian features of Lichfield's PBS and CIE. One requirement for a utilitarian technique is "welfarism", that is, judging states of affairs and policies in terms of the level of satisfaction achieved, which is identified with utility. Lichfield (1996:191) states that "whereas utilitarian welfare comprises an aggregation of individual preferences, CIE starts there but also has room for the decision-taker introducing over-riding social preferences". Welfare functions with this property have been discussed in economics by Bergson among others (Arrow 1963:23-24), but it still needs to be explained how the introduction of over-riding social preferences can promote the maximisation of community welfare. Arrow's (1963) welfare functions include only the preference rankings of each individual, and over-riding social preferences mean a concentration of power in the political or professional body setting these preferences. The rationality effect may be positive, though, as the probability of intransitive collective preferences is lower the closer one comes to dictatorship.

In Hill's opinion, items of cost and benefit related to different goals should not be compared. Is this only because most goals have different weights and are measured in different units? Or is it because goals reflect values that should not be traded off? Hill criticises Lichfield for not taking the logical consequences of the multiple goals approach: "Whereas benefits can be computed referring to different planning objectives, the benefits and costs are not necessarily additive or comparable. It is only meaningful to add or compare them when they refer to a common objective" (Hill 1973:19). Hill states this unreservedly, without indicating that aggregation might be acceptable in cases where the goals have equal weights. I interpret Hill as taking a radical stance holding that many goals are incommensurable; they cannot be traded off even in principle. Thus interpreted, Hill breaks more fundamentally with economic rationality than Lichfield does.[4]

Benefits and costs related to a goal represent progress toward that goal and retrogression from it, respectively. Furthermore, benefits and costs are defined in the same units as the goal they affect. When benefits and costs are not comparable across goals, it is only a short step to saying that the goals themselves are not comparable; that is, they are incommensurable. For how can it be impossible and meaningless to compare the benefits of fully achieving goal A and B, and still be possible to compare the goals? This is a crucial and difficult point in Hill's analysis, because he allows different goals to be compared after all by attaching weights of relative importance to them.

In a neoclassical economic framework, it is taken for granted that, e.g., a benefit of X$ gained by a reduction of vehicle damage can be offset by an increase in time cost of X$ because of slower driving, even if the gain might be related to the planning goal of traffic safety and the cost might affect the goal of accessibility. This is not so in the GAM, however, so there 1$ plus 1$ are not necessarily 2$. If the goals of a plan are incommensurable, there is no reason to expect neither maximum welfare nor consistent choice to follow from attempts at amalgamating all benefits and costs. This is because one is doing something which cannot really be done in a logical way, given incommensurability, so logic cannot be expected in the outcome. It is not even clear what should be meant by the "best" planning alternative when there is no apparent basis for comparing the goals. Assume that an X$ gain from increased achievement of one goal and an X$ gain linked to another goal both go into the municipal funds without earmarking. Then these sums of money can be used in exactly the same way and then result in exactly the same welfare improvement for the citizens. Still, Hill insists that the two X$ gains be treated differently and not be added.

It seems to pose a problem to this part of Hill's reasoning that a cost item or a particular benefit can affect the achievement of more than one goal. Investment costs often have this property, yet the problem is largely ignored in discussions of the GAM. Another argument against incommensurability is that the decision-makers cannot avoid making the trade-offs in their heads even if they refuse to make the procedure explicit by applying an algorithm. I am not convinced that a tenable case can be made for incommensurability between planning goals, and if one of Hill's assumptions deserves further scrutiny, I think it must be this one.

I interpret Lichfield (1996:184-85) as saying that the values of persons and groups are commensurable. A foundation for trade-offs is to be created by "a public discourse in which value-positions are taken and groups conduct an internal dialogue, in which exhortation, resource mobilization and planning for action fill the agenda". Lichfield seems to be of the opinion that valuation should not be deduced only from revealed or stated preference techniques. Rather, valuation should result from a deliberative-participatory approach; an example might be the deliberative monetary valuation discussed by Niemeyer and Spash (2001).

The minimal requirements approach of Lomovasky and Hill (1984) dismisses the maximisation of a unique objective function, searching instead for compromises among conflicting groups. A constraint set is specified for each actor, and the possibilities of coalitions are examined. Alternative courses of action are identified, together with assumed impacts, all of which are expressed in the same terms as the requirement variables. Hill (1985b:179) states that "(a) characteristic of the approach

is that, instead of attempting to achieve an optimal solution in terms of a set of weighted multiple criteria, it adopts a satisficing stance in order to achieve a compromise which satisfies at least minimally the interests of all participants". Hence, both in the GAM and in the minimal requirements approach Hill is a proponent of bounded economic rationality. In fact, his position is in general that:

> "(W)hen there is no consensus, an optimal solution is not conceptually feasible and the most suitable solution is that one in which all the interested and affected parties see themselves…least adversely affected, but which is unlikely to be the optimal solution from the point of view of any of their particular interests. This represents a satisficing solution rather than an optimizing one…" (Hill 1985a:30)

Although promoting the GAM for years, Hill kept an eye open for shortcomings of the technique and investigated how they could be overcome by combining the GAM with other evaluation techniques. "Integrated evaluation" (Alterman, Carmon and Hill 1984) is one such combination, supplementing the GAM with techniques more in line with economic rationality (cost-effectiveness analysis and CBA) and even with a technique at least potentially more directed to communicative rationality (implementation process evaluation). Hill (1985b:180-81) explains how such a composition of several interrelated evaluation techniques can further rationality by each component receiving variable attention depending on the nature of the problem under study.

Hill and Lichfield both aimed to replace the CBA in transport and land-use planning by an evaluation technique taking into account the incidence of plans. For this reason, they had to break not only with the maximisation of net benefits but also with its corollary of avoiding double entries in the display tables. Lichfield (1996:167) explains that "in community impact analysis, "double entry" is a necessary and deliberate feature, for it makes it possible to trace the *incidence* of the impacts on the various parties who are affected and to recognize the difference between the economic and transfer transactions. In this sense the accounts/transactions are not in fact double-counting".[5] Hill (1972:103-4) pointed out that using CBA as the only evaluation technique can lead to absurdities:

> "The evaluation of public programmes intended to ensure the improvement of incomes in a depressed region or of a disadvantaged group in the community (involving public subsidies) would not take transfer effects into consideration, i.e., benefits accruing to one location or group in the economy that shift to another location or group in the economy. *It is precisely this effect which may be a major objective of the plan.* Economic cost-benefit analysis in trying to eliminate double counting, does not record such transfer effects as benefits of the plan which they clearly may be." (italics added)

The GAM does not specify any logic determining the costs that the community should be willing to incur in its striving to fulfil the various goals. There is, for instance, no criterion of equal marginal welfare from increasing the achievement of the different goals by one more point. And given incommensurability it could not be, as measures of marginal welfare would not be comparable across goals. The marginal welfare of improving traffic safety might be worth 1$, and the marginal welfare of improving accessibility might be worth 5$. There is nothing in the GAM providing the planners with a foundation for questioning such results and criticising such allocation of public means. Yet such an allocation of investment funds would certainly not be economically rational.

In the GAM, market prices and preferences computed from market-like situations are to a large extent substituted by weights and point scores. This differs from the economists' reliance on revealed preferences (which was even stronger twenty and thirty years ago), although it does not necessarily break with economic rationality. The GAM was not presented by Hill as an entirely unambiguous technique, and both logically valid and invalid variants with respect to weight setting can be constructed (Sager 1981b). The rationality of the procedure depends on the interpretation of the weights, whether they relate to the situation before or after implementation of the plan, how and from whose preferences weights and point-ratings are deduced, whether measures are taken against strategic weight setting, etc. Manipulation would also detract from the communicative rationality of the planning process, and we now turn to this type of rationality via some comments on citizen participation.

Arguments for participation based on instrumental and communicative rationality

When the planning balance sheet and the goals achievement matrix reached their mature form in the late 1960s, it was already clear that the case for citizen participation in planning rested on very different lines of reasoning. The key-words were information from and empowerment of local people, and these terms were used in ways associating them with instrumental and communicative rationality, respectively. Participation in planning implies communication, and it is convenient to start by recalling the deep-rooted distinction between the transmission view and the ritual view of communication. Two crucial aspects of the transmission view are 1) reduction of uncertainty, the hypothesised basic desire which leads to a search for information in the interest of adjustment, and 2) communication viewed as a means of gaining influence. The ritual view accentuates mutual understanding and commonality, aiming at an increase of what is shared or held in common. Communication serves to produce common symbols preserving the social order, as argued by Duncan (1962, 1968). The ritual functions of communication are indispensable for the development of ideology in the sense of belief systems that are gradually taken for granted by the community. The centre of the transmission view is the conveyance of signals or messages over distance for the purpose of control, while on the other hand:

> "A ritual view of communication is not directed toward the extension of messages on space but the maintenance of society in time; not the act of imparting information but the representation of shared beliefs...(T)he archetypal case under a ritual view is the sacred ceremony which draws persons together in fellowship and commonality.' (Carey 1975:6)

The above views on communication reflect the meaning of the concept in contrasting models of rationality. According to the transmission view, communication is a means to an end. In contrast, communication as a ritual is not conceived in terms of means and ends by the interlocutors. They do not talk with the intention of strengthening society or producing ideology. Their conversation is more in line with the logic of Diesing's (1962) social rationality or Habermas's (1987) communicative rationality, although this "ideal" is utopian.

Some admittedly well known arguments in favour of citizen participation are listed below for three reasons (Sillince 1986). First, the arguments show how communicative claims are brought into local planning. Second, the arguments point

back both to the transmission view and the ritual view of communication, and hence they attach citizen participation to instrumental as well as to communicative rationality. Third, the list shows that citizen participation partly supplements the analytic planning techniques and partly is seen as a goal in itself. There are good reasons to ask whether all forms of participation are democratic, promote consensus, and so on. The task here, however, is just to systematise the alleged advantages.

A.   *Human growth and community*

A1.   Citizen participation is conducive to the qualities of man as a social actor. When successful, it counteracts apathy, isolation, and the feeling of powerlessness (Warren 1993).[6]

A2.   Citizen participation is a mobilisation process raising the political consciousness of the community. It promotes concord and the development of common values in the local community.

B.   *Deliberative democracy*

B1.   Citizen participation immediately strengthens open public debate by direct and, preferably, broad supportive involvement in local decision processes. It gives a positive long-term effect by improving the constituency's capacity for political judgement. Furthermore, it generates more reliable information on the preferences of local people for public goods and on the possibilities of achieving their objectives.

B2.   Citizen participation realises peoples' right to participate in making decisions affecting their lives. It legitimises plans when the actions considered for implementation are accepted by the groups directly affected.

B3.   Citizen participation can increase the confidence in the political system in so far as the reasons for local protests and demands are made better known and have some impetus. The presupposition is that it becomes more likely that local preferences are taken account of by the elected decision-makers. When the citizens can legitimately organise effective protest, anticipated reaction motivates the planners to propose solutions that can be defended in a possible confrontation.

C.   *Efficient implementation process*

C1.   The opposition to public plans diminishes when local people are involved in a formal collaborative process with planners and politicians. Conflicts causing delay or stalemate can be prevented.

C2.   Citizen participation can yield valuable information on the political and social consequences of implementing a certain plan. Citizen preferences can be consulted to back up some rather subjective steps of the evaluation procedure.[7]

C3.   Citizen participation can work as a kind of market research concerning public plans. Input from the local community should be part of the quality control of

the planning products. It would increase efficacy and make plans more likely to answer the needs experienced by the local people instead of reflecting the bureaucrats" understanding of the problems.

The arguments A1 and B1 point to communicative rationality. The essential point is not that the dialogue of the participation process *leads* to human growth and deliberative democracy, but that it *is part of* human growth and democracy. Hence, means-end reasoning is not required to justify citizen participation. The other arguments involve such reasoning, however. This is particularly so for the C-arguments, contending, in effect, that citizen participation is welcome partly because it can make life easier for planners and public officials.

The C-arguments indicate bounded rationality on the part of the planners, and citizen participation is recommended in order to relax the bounds. Kweit and Kweit (1987:35) conclude that:

> "Policy analytic techniques...actually rest upon the unrealistic assumption that analysts have access to comprehensive information about potential impacts of proposed policies and about the valuation of those impacts. Citizen participation could help the analyst maximize the information available in the policy process, thus integrating rationality and responsiveness."

I consider it typical for the planning profession that the enhanced-instrumental-rationality argument plays an important part even when self-government is admitted to be the crucial issue. Renn et al. (1993) offer a telling example of this tradition in their concluding paragraph. They assert that "(t)he main reason...for giving citizens opportunities to co-determine their natural and social environment is neither instrumental nor a prudent response to the legitimation crisis of traditional policy making...The involvement of affected parties represents the political value of government by the people, not just for the people." Still, their final sentence reads: "We are convinced that rationality is enhanced through participation while participation is facilitated through well-structured procedures" (ibid.210).

In concluding this section, it warrants mentioning that a considerable literature deals with the combination of formal evaluation and citizen participation (Sager 1982, 1984). In many contributions, the aim is to base a recommendation on the use of rational judgement aids placed alongside formally structured public interest arguments representing the different social policies of the involved groups (Parkin 1993). However, the coupling of formal evaluation and citizen participation has also been regarded as a practical case of combining instrumental and communicative rationality Sager (1990).

Communicative considerations in evaluation processes

The purpose of this section is to examine how the techniques of Hill and Lichfield arrange for public participation and dialogue in plan evaluation. Earlier studies provide a starting point (Sager 1981a,b), but the present discussion is informed by contributions from the 1980s and 90s dealing with communicative planning.

The cost-benefit analysis (CBA) has been assessed from a participation and democracy point of view by Sager (1979) and Nyborg and Spangen (2000), respectively. Very briefly, the CBA hampers community level dialogue because:

- When valuation is based on revealed as opposed to stated preferences, it does not matter what preferences affected people *say* they have for the impacts of the plan, as long as observations in market-like situations give the planners reason to believe in other preferences.

- Several impacts, even of the type that would in principle belong in a CBA, are excluded due to valuation problems.

- Equity considerations are excluded.

- Included impacts are valued in money even when there is normative disagreement making physical unit measure of the environmental change more informative (Nyborg 2000b).

- In general, the CBA is structured as a priority-setting tool for the society at large and to reflect national interests, while the direct impacts and the keenest discussants are often local.

- The analysis applies unfamiliar terminology and complicated and controversial calculations of costs and benefits, especially when market prices do not exist. This contributes to modest use of the CBA results among politicians.

The first two points are less important today than at the time when Hill and Lichfield developed their evaluation techniques. The currently popular stated preference techniques have widened the range of impacts gauged in monetary units and considered in the CBA. The listed arguments are still valid, though, and both the GAM and the PBS aim at answering all the six points of criticism.

Furthermore, both Hill and Lichfield saw the importance of involving the public in the evaluation process. For instance, Hill (1977:207) wrote that "(t)he challenge is to find a way to enable interested and affected publics to enter the planning process at the stages of objective formulation, generation of alternatives, and plan evaluation". Lichfield (1977:156) also commented that:

> "(O)f growing importance is the use of the evaluation analysis as a means of communication between the analysts and their clients and the public at large. This stems from the realisation that for informed communication with the public, and intelligent participation by them, there is the need for presenting the implications of alternatives in terms of the repercussions on the activities of people, and the quality of life which will result, in contrast to the somewhat arid and technological display so often associated with urban and regional plans. If this be so then the evaluation material itself must be prepared and presented on this basis."

The question of whether the intention of the authors was to bring forth more useful information or empower local citizens, i.e., whether their thinking reflected the transmission view or the ritual view of communication in the phrases of the previous section, is not pondered over here. The result was in any case that their techniques were given some properties with the potential for improving communicative rationality.

The way both authors subsequently developed their evaluation techniques show that the quotations above were more than empty words. Lichfield (1996:140) designs the CIE as a "display method" exactly because "(t)he planners and analysts must be ready to make available the full story in open discussion for justification of choice". The result is a large display of information, which is an important feature of the CIE. In light of all the consensus orientated work in collaborative planning recently (Innes 1996, Innes and Booher 1999), it is noteworthy that Lichfield (1996:197,199) builds the CIE on the proposition that "planning…aims not at a consensus solution but at one which does the maximum good or the least harm". (Lichfield here seems to forget for a moment his more modest satisficing-formulations quoted in the section on bounded economic rationality.) His position is that planning could not possibly aim at consensus in the light of the obvious underlying conflicts.

Hill (1985b:178) was of the opinion that the GAM, as well as the PBS, arrays the distribution of costs and benefits of policy options and therefore enables multiple advocates to participate with citizen groups in civic deliberations, making the groups' special needs known, and negotiating for projects the groups prefer. Nevertheless, he was not quite satisfied with the GAM as a tool in participatory planning. In his view the technique was better fit for centralised planning and for situations in which the role of the planners is to assist the decision-makers in developing central guidelines or policies, with the detailed planning being carried out on a decentralised basis. The reason is that participatory planning requires evaluative tools facilitating conflict resolution, and this is lacking in the GAM.[8] Moreover, one could say with Lindblom (1959) that directing the attention to goals can encourage conflict even between parties that might pragmatically agree on what action to take in practice. Hill took this challenge seriously when developing the "minimal requirements approach" with one of his colleagues (Hill and Lomovasky 1981, Lomovasky and Hill 1984). This approach to plan evaluation is intended to facilitate the resolution of planning conflicts between interest groups seeking multiple and conflicting objectives, although primarily addressing small-group participatory planning (Hill 1985b:179).

In order to prevent conflict between stakeholders like the development industry investing in the implementation of the plan, the Government, and the utility undertakings, Lichfield (1996:168) recommends "nesting". Stakeholders will have different evaluation criteria and procedures, like financial appraisal and company-focused cost-benefit techniques, and "if a dialogue is to be maintained between these stakeholders and actors, it must be on the basis of the methods of assessment/appraisal that they themselves are adopting to express their own interest" (Lichfield 1994:74). Lichfield suggests that the various evaluation frameworks can be "nested" within the CIE as a meta-method. Compare Hill's "integrated evaluation" approach mentioned in the section on bounded economic rationality; it integrates elements of diverse evaluation traditions in a complementary manner.

The growing social importance of environmental impact assessments gave the analysis of impacts a central place in the CIE. Lichfield (1996:124) aims at translating the "effects" of the plan into "impacts". By impact is meant not just a consequence or end product on which one can place an objective or subjective value. Lichfield is interested in the consequences of the effects on people, that is, how the effects will lead to changes in their way of life. The CIE brings the entries of the balance sheets as close as possible to the experience and the everyday living conditions of local people, and this is likely to

facilitate dialogue. Lichfield (1993:128) holds that attempts at reaching agreement "can more understandably be conducted in terms of the impacts on sectors that changes in the applicant's or planning authority's stance would have. It is these which matter to the parties."

Lichfield et al. (1975:88) stick to the economic tradition of revealed preferences and regard observation-based preferences as generally superior to any form of survey of public opinions and attitudes concerning postulated objectives. Lichfield does not facilitate dialogue by letting people express the preferences they hold as responsible citizens. He elicits the consumer preferences, not the subjective social preferences that people have, to point to a difference analysed by Nyborg (2000a). There might be less need for introducing the decision-makers' over-riding social preferences (mentioned in the section on bounded economic rationality) in the CIE, were affected people given the opportunity to express the preferences they hold as ethical observers and responsible citizens (O'Doherty 1996).

Hill is far more open than Lichfield on the question of how to elicit preferences, as he has to be because of the problems with weight-setting in the GAM.

> "Among the direct approaches that might be adopted in the formulation of objectives and their respective weights are consultation with elected officials, consultations with members of the community power structure, consultation with community interest groups, sampling of various «publics» in the community, attitude surveys, and public hearings." (Hill 1973:43)

Thus, central features of the GAM provide the planners with a motive for communicating with the interest groups and the general public. Hill (ibid.42) did, however, anticipate difficulties because politicians might be unwilling to express their relative valuation of the objectives, for instance. "In practice, goals and their relative weights may thus have to be determined iteratively as a result of a complex process of interaction among elected officials, administrators, planners and various formal and informal groups…"

Concrete and community-based goals, a wide range of impacts, and explicit differentiation by groups might facilitate dialogue in participatory planning (Sager 1981a). However, these features also contribute significantly to the complexity of the GAM and the CIE. This problem is acknowledged by both Hill and Lichfield. Not surprisingly, both authors assure us that the advantages of the techniques outweigh the drawbacks. As Hill does not see participatory planning as the main context of the GAM, he turns to instrumental rationality to make his case:

> "Knowledge of the effects of alternative courses of action with regard to all valued objectives, and knowledge of the incidence of these effects with respect to various aggregates of people should enable the decision-maker to make more rational decisions, albeit with the help of more homework than usual." (Hill 1973:45)

Lichfield, on the other hand, clearly sees a role for the CIE in local planning involving the public as active participants. His concept of rationality, although largely instrumental, thus admitted the importance of communication already in the early 1970s: "(T)he rational approach is to provide decision-takers and the community with the best possible information for debate and choice" (Lichfield et al. 1975:77). His more recent conclusion, then, is that "although an apparently cumbersome display, the planning

balance sheet (and thereby CIE) does offer raw material to encourage the participatory process in a democratic way" (Lichfield 1996:200). The divergence between the two authors' arguments for believing in their techniques despite complexity reflects their different aims. "Thus the GAM seems to be directed at examining whether the plans have achieved certain aims which the planners and decision-takers consciously set out to achieve. The PBS is directed at something different: what will be the consequences of the plans in question for the welfare of all those who are affected" (Lichfield et al. 1975:96).

Strategic action distorts communicative rationality, and this makes the manipulation theme important in participatory planning. Seen from a manipulation perspective, there is reason to be on the alert when techniques rely on goal formulations to such high extent as does the GAM. It is well known that political goal formulations serve many purposes, and that a stated goal is not necessarily meant to be fulfilled. The functions of legitimising the previous actions of an organisation, the need to improve its image in the eyes of the general public, and the wish to avoid internal conflict may be as prominent when articulating goals, as the motive of signalling what the organisation is in fact trying to achieve.

Planning does always provide ample opportunity for manipulation (Flyvbjerg et al. 2002, Sager 1999, 2001). Evaluation processes are certainly no exception, and complex techniques consisting of many tasks, involving many groups, and depending on a large number of parameters that are not exogenously given are likely to increase the scope for manipulation (Self 1970). Lichfield et al. (1975:75) warn that "(p)articular groups may…have an interest in suppressing some of the information. Some may argue the case for not publishing evaluation results on the grounds that typically the exercises are too complex and difficult for the non-practitioner and could mislead…" Because of the focus on goal formulation and weight setting, the GAM is vulnerable to some forms of strategic behaviour that do not create problems in the CIE. Buckley (1988) and Voogd (1988) discuss manipulative weight setting in multicriteria evaluation, and the arguments apply to the GAM as well, even if a grand index is usually not computed with this technique. Buckley states that "(p)erhaps the greatest charge which can be levelled against the multicriteria approach is that it diverts attention away from the information content of the initial impact matrix and towards various arithmetic manipulations of that matrix" (ibid.60). This criticism strikes the GAM but not the CIE.

In an exposition connecting the GAM to goal programming, it is assumed that each affected group develops its own set of goal weights (Hill and Werczberger 1978). Most of the conflicts will then probably be about the group weights. However, strategic behaviour in setting the goal weights might lead to undesirable results in a participation process. In an open planning process, each interest group will know which other groups are taking part, and the aspects of the plan approved or opposed by these groups. Group A might strongly approve an effect Z rather unimportant to other groups, and this effect affects goal g favourably. Group A assumes that the other groups will give goal g only a moderate weight. To increase the probability that the plan is designed in such a way that effect Z will occur, group A can attach a higher weight to goal g than it would have done without knowledge of the indifference of the other groups. Suspicion of such strategic setting of weights is likely to undermine the dialogue.

Neither the GAM nor the CIE include procedures for approaching communicative rationality by uncovering manipulation and communicative distortion. However, "evaluation can communicate the reasons for decisions in an intelligible way that enables and facilitates open democratic debate" (Alexander 2001:1). It is only to the extent that evaluation techniques can be interactive that they can involve communicative rationality (ibid.6). My aim in this section has been to show that both Hill and Lichfield tried to develop techniques useful as interactive tools.

Consistency in evaluation with the GAM and the CIE

This section applies the Arrow theorem to planning recommendations and social decisions based on ranking techniques. The purpose is to show that the use of formal and calculative decision-making techniques in planning does not necessarily solve the problem of being simultaneously consistent and democratic. Arrow's (1963) impossibility theorem states that no cycle-free decision rule can at the same time satisfy unrestricted scope, the Pareto principle, non-dictatorship, and independence of irrelevant alternatives.[9] The Arrow conditions were chosen to fit the context of aggregating individual preferences. This section explains the meaning of the conditions when arguments instead of preferences are to be amalgamated, and an argumentative version of the Arrow theorem is formulated. This makes it possible to conclude on the consistency properties of planning recommendations based on the evaluation techniques of Hill and Lichfield. A more detailed account dealing with several evaluation techniques and generalising the theorem is found in Sager (2002).

All the Arrow conditions state profound democratic claims. But are they still claims on democracy when applied to the aggregation of arguments (items in an evaluation technique) instead of individual preferences? To be sure, many models of democracy see the aggregation of individual preferences as the central theme, as for instance models of majority voting. There are also models of deliberative democracy, however, focusing on ways of making social decisions through open public debate. Formal evaluation techniques can be seen as tools for informing such debate. Then the amalgamation of items in the technique must be in harmony with the fairness criteria one would like to use when deriving a social decision from the public discussion. In this sense, the fairness claims of the reformulated Arrow conditions below can be interpreted as democratic claims, that is, criteria one would want to guide the public discussions of a deliberative democracy.

The core concept of this section is "argument", which is a statement giving a reasoned ranking of the planning alternatives. The input to any evaluation technique is information on a set of items, and the set that can be handled varies between some of the techniques. The items can be the expected effects or impacts of the plan; they can also be related to the criteria, attributes or goals of the plan, or the groups or sectors affected by it. Now, whatever the character of the items and their measurement scales, *each item dealt with by the evaluation technique can be interpreted as an argument.* Depending on the type of item, the arguments say that, e.g., plan X will cause more traffic noise than plan Y, plan X will bring more benefits than plan Y to the disadvantaged groups, plan X gives higher fulfilment than plan Y of the accessibility goal. Evaluation techniques imply formal amalgamation of arguments, in many cases resulting in an overall priority ordering of the planning alternatives. Lichfield's community impact evaluation (or the

planning balance sheet) and Hill's goals achievement matrix can both handle effects measured on ordinal scales (intangibles).

The focus here is on ordinal evaluation techniques because Arrow's condition "independence of irrelevant alternatives" requires that only information about the *ranking* of alternatives be taken into account. Information on future impacts is limited, and some of them cannot be measured on interval scales or ratio scales. The assessment of plans for the environment, e.g., urban green structure, often relies on impacts that are hard to quantify, like visual quality and long time effect on human health. Ordinal evaluation, that is, ranking technique, is thus required. Even in such cases, however, ordinal techniques are not necessarily used for all the items considered in the overall evaluation. Instead, they can give a summary assessment of items not measurable on more demanding scales, i.e., the intangibles.

When the intangible consequences are considered important to the overall evaluation, the planners may wish to present these items on a par with the quantified effects. Ordinal techniques are therefore sometimes used to compare the merits of the alternative plans across the entire set of items, whether quantified or not. Nearly all the techniques using ordinal or more demanding scales depend on algorithms and are then denoted "formal evaluation techniques". The algorithm aggregates subsets of arguments or provides a summation of the entire set, leading to a recommendation of the "best" alternative. Formal evaluation techniques do arithmetically what dialogical decision-making does informally: They reach a reasoned recommendation.

It is assumed here that the planning alternatives are compared without reference to an exogenously given assessment scale. Then, if a rank-based evaluation technique satisfies the properly reformulated Arrow conditions (see below), it cannot offer a guarantee against decision cycles. Hence, when consistency is the overriding value, some aspect of fairness has to be compromised. This section illustrates some hard choices that have to be made in public planning by exemplifying the kind of properties rank-based evaluation techniques must have in order to escape the dilemma.

Hill (1967,1968) presents several variants of the goals achievement matrix (GAM), one of them rank-based. Hill (1968:24-25) gives examples of ordinally measured goals in a plan for a new transport route. They are: comfort and convenience of travel, community disruption and preservation of open space, and visual enhancement and preservation of historic sites and buildings. The number of effects measured on an ordinal scale might be higher in the GAM than in other multicriteria techniques. This is because all effects related to a certain planning goal should be measured in the same units as the goal, according to Hill. Hence, if there is an ordinally expressed aesthetic goal and there are costs of improving the aesthetics, the planning alternatives should only be *ranked* against this cost argument. Another characteristic relates to the way ordinal input numbers for the algorithm are generated. Even if the choice set consists only of the two new alternatives X and Y, the numbers reflect a comparison to the existing situation. If X is better than the existing situation as assessed against a particular goal, X is graded (+1); if there is no significant change it gains (0), while deterioration gives (-1). Furthermore, the GAM requires the weighting of groups (incidence weights) as well as goals. The priority setting algorithm sometimes used is a product sum and generates an overall numerical score for each plan. However, Hill also acknowledges the possibility of leaving the goals achievement accounts disaggregated.

Lichfield (1996) presents the "community impact evaluation" (CIE) as a member of the cost-benefit family of evaluation approaches (as he did with the planning balance sheet). Some of the items are usually measured in monetary units and added. However, he makes it clear that ranking plays an important role in environmental applications of the CIE (ibid. Ch.17). The evaluation studies of the Prospect Park and the Manchester Airport (in the book *Community Impact Evaluation*) are both rank-based. The planning alternatives can be ranked against impacts and sectors. The four main sectors are producers on site and off site and consumers on site and off site, although further division is often used. In the Manchester Airport case, predicted effects are transformed into impacts on sectors before the ranking takes place. Hence, what counts in the evaluation is how each sector (group) is affected. Each item affecting the sectors differently constitutes an argument. There are no overall numerical scores in the CIE. The conclusions and the final recommendation are derived directly from the performance levels, the impact tables, and possibly from other disaggregated information.

I now comment on each of Arrow's conditions from the perspective of the argumentative interpretation of formal evaluation technique. In order to establish the version of Arrow's impossibility theorem pertaining to such technique, the argumentative analogies to Arrow's four assumptions must be examined. Moreover, it is checked whether they are satisfied or not by the formal evaluation techniques dealt with here. This exercise clarifies the meaning of each condition in the evaluation context.

Unrestricted Scope

The evaluation technique should be able to process any set of planning alternatives and to assess them against any (logically) coherent set of items (arguments).

Different evaluation techniques process different types of items. When the items are anticipated impacts of the plan, the technique should be able to deal with all kinds of impacts; when the items are groups affected by the plan, it should handle all possible groups, and so on. Contrary to the CBA, the techniques discussed here usually satisfy this requirement. However, the information required by the GAM may not always be available. Hill (1968:27), writes that "(t)he goals-achievement matrix is not very useful if weights cannot be objectively determined or assumed". In fact, if the planner has no idea of the relative importance of impacts, they cannot be included in the GAM.

Pareto Principle

When planning alternative X is held to have higher quality than alternative Y as assessed against every item (argument), the evaluation technique must rank X above Y.

The requirement ensures that the algorithm producing overall numerical scores cannot be "creative" (see the IIA condition below) to the extent that unanimity among the arguments of the analysis is not respected. A high weight for a particular group can give an alternative serving this group a higher total score than obtained by an alternative serving other groups, although the last-mentioned option may be ranked highest against every planning goal. Hence, the group weights (incidence weights) of the GAM cause that technique to violate the Pareto principle. It would give a stronger guarantee for respecting the Pareto principle were the algorithm required to ignore all information not expressed in the arguments. However, this would make the weights of the GAM irrelevant. Under unrestricted scope all pertinent arguments can be taken into account,

and hence there is less reason for using algorithms that bring excluded arguments in through the backdoor by manipulating the weights, for example.

Non-dominance (Non-dictatorship)

The evaluation technique is prohibited from taking the priority sequence of any single item (argument) and automatically making it the overall result of the formal evaluation regardless of the ranking of planning alternatives as assessed against each of the other items.

The GAM and the CIE satisfy this condition, as must every evaluation technique that is of a genuinely *multi*criteria type. The non-dominance condition is violated by all lexicographic techniques, see Fishburn (1974) for theory, Holmes (1972) for an evaluation technique, and Harness and Sinha (1984) for a road planning application.

Independence of Irrelevant Alternatives (IIA)

This condition requires that the evaluation technique yield a priority sequence of a given set of planning alternatives depending only on how *these* alternatives are *ranked* against each item (argument) considered by the evaluation technique.

The independence part of the IIA condition implies pairwise comparison. Then, if a new alternative is proposed late in the planning process, it does not affect the mutual ranking of the options already compared. The overall ranking of alternatives X and Y should rely only on the ranking of X and Y against each of the specified items handled by the evaluation technique, even when information on other alternatives is also available.

The required ranking excludes all except the rank-based evaluation techniques. What is more, the GAM but not the community impact evaluation (CIE) breaks with this Arrow condition. Weights give information that is not logically warranted on the basis of purely ordinal ranking of the alternatives against each argument. Furthermore, the technique should not be "creative" in the sense of transforming ranking positions into figures that are manipulated by arithmetic operations. That is, the technique should not itself create "quantitative data" and turn them into decisive information for the setting of priorities (see Arrow [1963:27] for an example). This is done in the GAM when "translating" ordinal comparisons with the existing situation into numbers (+1, 0, -1) as already explained, and multiplying these numbers with various weights.

Another example of the violation of the IIA condition is the comparison, both in the GAM and the CIE, of every alternative with the existing situation even if the option of "doing nothing" might not be in the feasible choice set. The GAM uses these comparisons to generate the figures just mentioned. This procedure yields more information than is obtainable only from the pairwise comparison of the real choice alternatives.[10]

The importance weights used in the GAM are not accepted information according to the IIA condition. As pointed out by Kettle and Whitbread, it is not logical to rank items of advantage and disadvantage in order of importance *before* undertaking the evaluation. "Importance must relate to the magnitude of the differences between alternatives. This cannot be determined until after the schemes have been designed and the differences between them ascertained" (Kettle and Whitbread 1973:97).

While the other three Arrow conditions have obvious relevance for the democratic qualities of the decision process, the IIA condition appears to be of a more technical nature. However, the ranking requirement ensures that the evaluation can encompass all impacts without introducing unduly subjective information about the intangibles. And the independence part of the condition (pairwise comparison) eliminates the motive of special interests to influence the ranking of alternatives against an item for strategic purposes. Furthermore, "creativity" would open for manipulation of the social decision in that the evaluation technique might recommend a winner on the basis of information only loosely connected to the arguments' ranking of alternatives.

The impossibility theorem for formal evaluation techniques can now be stated as a direct analogy to Arrow's theorem concerning the aggregation of individual preferences:

No formal evaluation technique can combine the argumentative interpretations of unrestricted scope, the Pareto principle, non-dominance, and independence of irrelevant alternatives when it is unacceptable that its recommendations can cycle.

This theorem makes a case for evaluation techniques assessing each planning alternative independently against an exogenously given standard, like the CBA does, because such techniques avoid the pairwise comparisons potentially producing intransitivity. When the likelihood of cycles is considered small and not decisive, the impossibility theorem is also an argument for non-aggregated techniques like the CIE, as they can limit information input so as to comply with Arrow's conditions. The CIE satisfies all the reformulated Arrow conditions provided that the "do nothing" alternative is kept out of the comparisons when it is not a real option. The technique contains no aggregation formula that can be tested concerning respect for unanimity, but the method of cost-benefit analysis underlying the CIE is here taken to secure agreement with the Pareto principle. Hence, the CIE satisfies the fairness requirements implicit in the Arrow conditions. In spite of this, Lichfield evades the impossibility theorem of formal evaluation techniques by not specifying a procedure for aggregating across items that are not priced.

When setting priorities on the basis of the disaggregated impact tables and displays of the CIE, the inconsistency problem reappears, however. Planners Tom, Dick, and Harry may well reach different conclusions when ranking the alternatives X, Y, and Z on the basis of the CIE. For some combinations of rankings they will form majorities of two planners for each of the three planning alternatives. Hence, there is no guarantee against decision cycles in applying the CIE. It is nevertheless likely that the thorough evaluation process of the CIE stimulates a common understanding of the planning problem, thus giving a high probability of consistency. In contrast to the CIE, the GAM fails to satisfy the fairness demands of at least the IIA and the Pareto principle. This is the price paid by users of the goals achievement matrix for escaping decision cycles.

Conclusion on rationality in ex ante evaluation

Both the CIE and the GAM suggest an evaluation based on bounded rather than perfect rationality from an instrumental point of view. As Lichfield regards the community impact evaluation as belonging to the family of cost-benefit approaches, it is perhaps not surprising that Hill is the one who really dissociates himself from economic rationality.

His insistence on the incommensurability of goals is the decisive reason for this conclusion.

In contrast to the cost-benefit analysis, both the CIE and the GAM open for project assessment related to groups and for more directly communicated input to the evaluation. However, Lichfield's CIE technique is the one most thoroughly designed for participatory planning. Both the process of working out the display tables (the planning balance sheets) and the process of making sense of the results and applying them in reaching a decision call for dialogue. An overall conclusion would be that the GAM is challenging economic rationality in the most radical way, while the CIE makes the arrangements best suited for the pursuit of communicative rationality.

The interest in studying the communicative qualities of evaluation processes seems to be increasing due to the emphasis on critical pragmatism in the planning debate (Alexander 1998, 2001, Khakee 1998, Voogd 1998). The experimentation with combinations of monetary valuation and eliciting public values in dialogical processes seems to be especially lively in environmental valuation analysis (Jacobs 1997, O'Hara 1996, Sagoff 1998). For example, various forms of citizen juries have been proposed (Brown et al. 1995, Kenyon et al 2001).

The dilemma expressed by the Arrow type impossibility theorem in the previous section gives the planner a choice: (1) Apply the community impact evaluation (CIE), or (2) apply the goals achievement matrix (GAM) or another rank-weighting technique. In the first case the impact tables are left to some extent disaggregated, and there is a (slight) possibility of decision cycles when several planners make the final recommendation without guidance from commonly accepted weights. This is the "cost" of satisfying the Arrowian demands for a fair evaluation technique. In the second case the evaluation technique arrives at a recommendation or at least gives planners and decision-makers more guidance than in the CIE for making the choice. This extra assistance is bought at the price of violating some of the fairness requirements and providing additional opportunities for manipulation in the formal evaluation.

On the one hand, there is the open-ended and fair evaluation technique (CIE). And on the other hand, there are the evaluation techniques that close in on the final answer by compromising some fairness ideals on the way. There is thus a democratic price to be paid for elimination of the arbitrariness and thus threat to instrumental rationality that might linger at the end of the CIE process. There is no objective solution to this balancing of procedural values.

Notes

[1]A session in the conference *50 Years of Planning in Israel: Theory and Practice* (Technion, Haifa, 20-21 December 1998) paid tribute to Morris Hill's achievements as an academic. This offered a welcome opportunity to revisit the debate between him and Lichfield and to comment on their ideas in light of the Habermasian communicative planning style that has grown popular largely after the debate ended. The present article builds on the paper I read on that occasion. However, it is supplemented by a social choice analysis of the consistency properties of the evaluation techniques, first presented at the NORDREGIO seminar on *Spatial Development in Europe* (Stockholm, 4 January 2002), see also Sager (2002:Ch.2).

[2] As Habermas (1990:198) puts it: "Argumentation insures that all concerned in principle take part, freely and equally, in a cooperative search for truth, where nothing coerces anyone except the force of the better argument". It is common in communicative planning theory to recommend that arguments be exchanged in accordance with the norms of Habermasian dialogue (Flyvbjerg 1998:213):

> "Validity and truth are ensured where the participants in a given discourse respect five key processual requirements of discourse ethics: (1) no party affected by what is being discussed should be excluded from the discourse (the requirement of generality); (2) all participants should have equal possibility to present and criticize validity claims in the process of discourse (autonomy); (3) participants must be willing and able to empathize with each other's validity claims (ideal role taking); (4) existing power differences between participants must be neutralized such that these differences have no effect on the creation of consensus (power neutrality); and (5) participants must openly explain their goals and intentions and in this connection desist from strategic action (transparence)."

Communication observing the above conditions is considered to be communicatively rational.

[3] Lichfield does not give up his maximising ambition, however. A major issue, he says, is "aiding the selection by the decision-takers...as to which of alternative plans they should adopt as the best (i.e. most worthwhile and most satisfactory) for the community for whom they are planning, in terms of maximising its «welfare»" (Lichfield 1994:56). The aim of putting the planning alternatives to a welfare maximising test leaves the community impact evaluation in an ambiguous position regarding the use of bounded rationality.

[4] Although it violates the incommensurability principle, Hill (1968) suggests that the goal weights and group weights can be used for calculating a grand index if that should be required.

[5] Note the difference between "double entry" and "double counting". When redistribution is of interest, an effect must be allowed to enter the account twice, i.e., both as a benefit to one group and as a cost to another group. This is double entry, and it is acceptable. In contrast, recording the same change for a group in two different entries of the account is unacceptable double counting; e.g., listing the same benefit to road users both as reduced generalised cost and as improved road standard.

[6] The resistance-to-alienation argument takes for granted that the participation process does not merely expose the local people to yet another destructive confrontation with an unresponsive bureaucracy. This is no empty caveat, because "black box" techniques and impenetrable bureaucracy are usually seen as two of the main alienating forces in modern society, and lay people are likely to be up against both of them in planning processes. The experience of participation will have the intended effect only if the local inhabitants get the feeling of being able to control their own social environment instead of being victims of alienating and uncontrollable forces.

[7] The argument is well put by Renn et al. (1993:209):

> "(T)he public has something valuable to contribute to policy making. Experts and regulators are often restricted in their assessment of a project and confine their analysis to the generalizable factors. Local specifics or other dimensions of concerns are often neglected. Public participation helps to include these concerns in the decision making

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process and to avoid potential consequences of which the experts involved were not aware."

[8] Nevertheless, it is worth noting Miller's (1980) positive experience from using the GAM in a Washington community to aid in selecting neighbourhoods for rehabilitation loan assistance. He concludes that:

"The response of the planning agency, the Advisory Committee, and the City Council to this evaluation was genuinely positive. These groups appreciated having empirical evidence in an understandable form, were able to follow – and were even delighted by – the methodology, and were convinced that the analysis was valid, in spite of the fact that the results were unexpected." (Miller 1980:204)

[9] The Arrow conditions in the case of aggregating preferences:

Unrestricted scope requires that an acceptable amalgamation device be able to process any (logically) coherent set of individual preference rankings of any number of choice alternatives.

The Pareto principle requires that when every individual prefers X to Y, the amalgamation device must rank X above Y in its social ordering. That is, whatever else it may do, an acceptable device must honour unanimity.

Non-dictatorship prohibits an acceptable device from taking the preferences of any single individual and automatically making them the social ordering regardless of the preferences of all other individuals.

Independence of irrelevant alternatives (IIA) requires that the social ordering of a given set of alternatives depend only on the individuals' preference orderings of those alternatives.

It is probably most difficult to obtain an intuitive understanding of the IIA condition, so its rationale is briefly spelled out below. Concerning the ranking requirement, Arrow (1963) sticks to the methodological rule common in economics and many other fields of research, that "only observable differences can be used as a basis for explanation" (ibid.109). That is, differences between social preference levels should be derived from observable changes in the utility of each individual. These are changes that can be read from the indifference map. In the case of two goods, this is a diagram filled with indifference curves, each showing the combinations of the goods from which the individual draws a constant amount of utility.

The independence part of IIA means that if the individuals' preferences over the potential but not actual alternatives change while their preferences over the actual alternatives stay the same, then the social choice among the actual alternatives stays the same. By violating this requirement we may invert an ordering of two alternatives not because anything has changed in respect of those alternatives, but because we had introduced or deleted a third state in the scope of choice. So an option X might be the best in a given triple (X, Y, Z) but not the best choice in a pairwise comparison from this triple, e.g., (X, Z).

The IIA condition requires that a method of decision give the same result every time from the same profile of ordinal preferences. That is, the result is not to depend on changes in the planning environment not affecting the pairwise preferences between alternatives in the choice set. This interpretation shows that the IIA has democratic relevance. One wants to base the outcome only on the individuals' rankings of the alternatives in the choice set, but doing so is clearly impossible if the method of amalgamation gives different results from identical sets of rankings.

[10] Agency policy often requires the "do nothing" option to be listed among the feasible alternatives. It is therefore of interest whether or not Arrow's theorem is valid even when the status quo is a prespecified alternative that is always feasible. The presence of such an alternative implies that the condition of unrestricted scope is violated, as analysed by Richelson (1984). Gibbard et al. (1987) prove that it is possible to make consistent decisions satisfying the other Arrow conditions when a fixed feasible alternative exists.

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