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MID-PROJECT OBSERVATIONS FROM
A STUDY OF STRATEGIC MONITORING
IN HEALTH CARE
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Mark F. Cantley

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INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS
A-2361 Laxenburg, Austria



PREFACE

Within the research program of IIASA's Management and Technology Area, the subject of Program Management has been defined as "the general problem of translating ideal, multi-dimensional goals into achievable goals, and devising the necessary mechanisms for achieving this in a complex organizational situation". Strategic planning and control for health care is an example of such a problem. Since early 1978, research has been conducted in co-operation with the U.K. authorities into some aspects of the implementation of the systematic strategic planning system initiated in 1976 by the ministry responsible, the Department of Health and Social Security. The research has concentrated on the subject of strategic control, or "monitoring".

The study is still in progress, but this paper describing "mid-project observations" illustrates the need for monitoring, describes some research and ideas contributing towards more effective monitoring, and suggests some of the difficulties facing its further development. The work is set in the specific terms of a particular service in one country; but the issues involved are of universal significance, for the development of systems by which large-scale public programs can "learn", gradually but systematically, in a long cyclic progress.



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OF STRATEGIC MONITORING IN HEALTH CARE

Mark F. Cantley

1. Background

IIASA has been active for some years in the development of mathematical models for health care systems, as summarized in Figure 1.

The Management and Technology Area (MTA) have since 1978 been studying strategic planning for health care, in a specific authority in the U.K. This project has had a rather different emphasis from the modelling work, concentrating more on a specific case study in a current setting, with its emphasis being on long-term monitoring and control.

The U.K. reorganized its health care system in 1974, dividing England and Wales into 15 Regional Health Authorities (RHAs), further sub-divided into 90 Area Health Authorities (AHAs), many of these further sub-divided into Districts. Each of the 200 districts has a population of approximately 200,000.

The health authorities have a comprehensive responsibility for the health of the communities they serve; buildings, staff and other resources being the instruments through which these responsibilities are discharged. All expenditure is financed by central government, which allocates the total budget between health authorities in proportion to population, with adjustments for age distribution, cross-boundary flows, local morbidity patterns, and the special needs of teaching hospitals. This principle of division was accepted by the ministry (DHSS: the Department of Health and Social Services) on the advice of a specialist working party, and imposed on the system in spite of the opposition of those regions (particularly in London) for whom the change was disadvantageous. It is an interesting

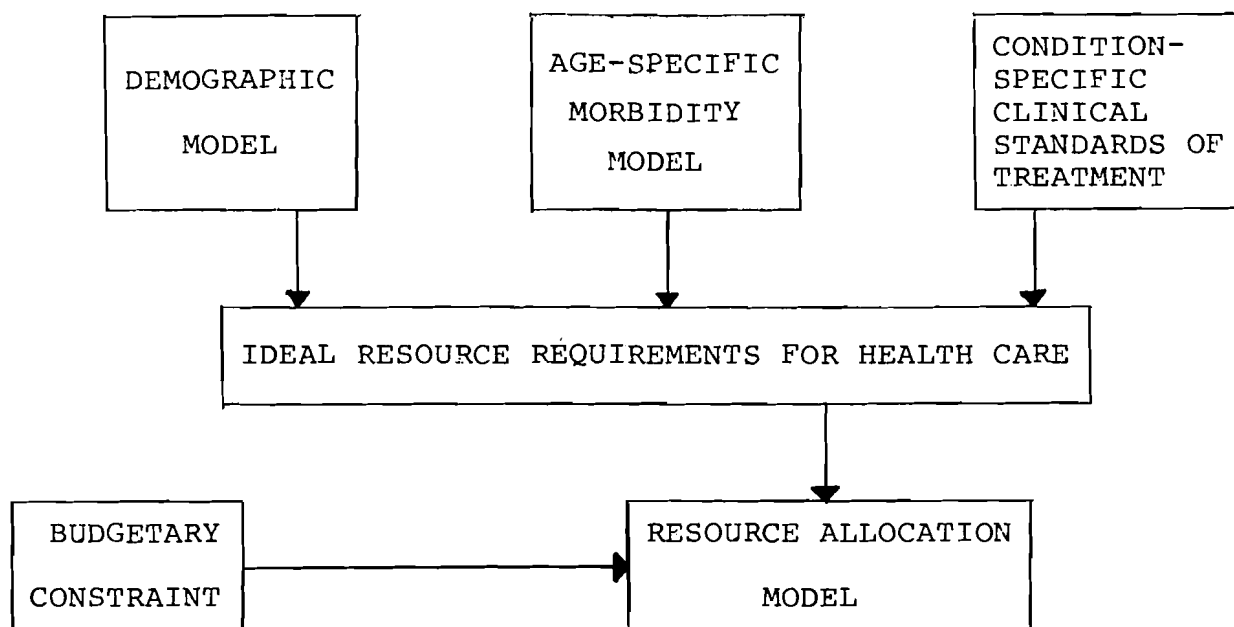


Figure 1. Outline of IIASA Modelling Work for Health Care Systems.

example of the deliberate adoption by central government and implementation of a "rational" recommendation in an area previously more subject to "political" influence, and I simplify only slightly for the sake of brevity.

The particular interest of the U.K. system for our research has been the attempt since 1976 to develop a systematic strategic planning system with a 10-year horizon. Detailed instructions on how to prepare these plans have been sent to the 15 RHAs and 90 AHAs responsible for them. The instructions cover the organization of the documents and the data, but not of course the actual numbers and decisions. The use of the word "authority" implies freedom and responsibility for the health authorities to make and implement their own local decisions, subject to their budget constraints. Considerable influence on policy is still exerted, however, by DHSS "norms" and "guidelines", which indicate the official policy preferences of the ministry and central government. RHAs amplify or modify these guidelines in transmitting them to their constituent areas. But the structure is basically de-centralized, respecting local knowledge of local conditions and/or local preferences. Again, the structure of the strategic planning system is an example of text-book rationality, although it is acknowledged that existing staff may initially be unfamiliar with the new procedures.

The MTA project has been studying the second round of strategic planning in this process (the first, rather rough, plans emerged in 1977; the second should have been produced by December 1978, and most are by now completed). The study has concentrated on a mixed rural/urban county of northern England containing several districts; but contact has also been made with researchers or health authority officials in many other regions, as well as with DHSS staff.

An IIASA Research Memorandum: RM-78-54, "Strategic Control for a U.K. Regional Health Authority--A Conceptual Framework" was produced in September last year. This defined the scope of the MTA project more specifically, focussing functionally on the question of strategic monitoring, which was defined as

"...the process of information-gathering by which the organization checks both its performance relative to targets, and the behaviour of the environment, assumptions about which formed part of the basis for the plan and the targets. Control actions result from the monitoring, and are typically:

- (a) to change current actions to ensure closer alignment with plan;
- (b) to re-interpret plan targets in light of latest environmental information, and then as (a) above. (Plan targets are often set in relative terms, e.g., "units per thousand population", so that absolute terms, e.g., "units" require an environmental input to fix them).

At a higher level, other results of monitoring may be:

- (c) to discover whether an assumption made as a basis for planning (e.g., a postulated relationship) has in fact proved correct; if in fact it is wrong, or a more accurate assumption is now available, an adjustment to plan may be made;
- (d) to discover that even the perfect achievement of a planned target is not found to be satisfactory, e.g., because it has not contributed towards the policy objective to which it was supposedly related. The target may then be abandoned, modified or replaced and action as in (a) initiated.

On all levels, the results and possible control actions (a) to (d) above have their interpretations. At the strategic level, the necessary actions are the least likely to be capable of immediate implementation, since by definition they require the widest view of implications and the greatest authority over both resources and policy objectives."

In order to limit the resource requirements of the research further, the project has concentrated on the care of the elderly. The strategic planning of services for this "care-group" was seen as containing fully sufficient issues of planning methodology, policy formulation and alteration, reaction to

demographic change, and data problems, to provide a field for research quite varied enough to illustrate all the aspects of interest.

So much for background. The remainder of these notes represent essentially random personal observations, provoked by experience to date on the project, and by some acquaintance with the literature on health care planning. They should not be viewed as having any official imprimatur by IIASA or the U.K. health authorities. Some of the points I have shamelessly borrowed from others, some assertions are deliberately abbreviated for impact and to stimulate debate at the workshop. I hope they include both good and original points, but will not claim that these overlap.

2. Money or Method?

In national political and economic debate, it is common to point out the folly of those countries which pursue internal dispute about the distribution of wealth to such lengths that the production of the wealth itself is imperilled. Get the money first, divide it later. I am slightly puzzled to find myself arguing what appears to be the opposite case on health care: let's get right the deployment and effective control of the resources already available, and then see whether we need any more. Perhaps we'll find we need less?

I haven't fully rationalized the processes of reasoning, the patches of evidence, and the missing links bridged by prejudice, which tempt me to this conclusion; but can identify some of the scraps. In round and memorable numbers, the U.K.'s 50 million people spend per year on health a sum of around \$10 billions. The U.S. population is a little over 200 million, and spends some \$140 billions. There is little epidemiological or other evidence to indicate that the average U.S. citizen enjoys additional health, or has health care needs, commensurate with this enormous difference in per capita expenditure. Indeed if one looks at mortality statistics as Cochrane et al. have recently done* for the 18 developed industrial economies (GNP over \$2,000 per capita, population over 2 million), the correlations are in many cases perverse or negligible (Table 1).

The conclusion one might draw--and that has in fact been widely drawn--is the need in any country for effective control, at least within the publicly-financed health sector. Thus we are happy to justify our emphasis on monitoring and control. The control of the private health sector has generally been left to market forces, though public regulation of information provision about costs and effectiveness might improve their operation, as would the removal of subsidies stimulating consumption.

*Cochrane, A.L., St. Leger, A.S., and Moore, F. (1978) Health Service 'input' and mortality 'output' in developed countries. *Journal of Epidemiology and Community Health*, 32, pp.200-205.

Table 1. Correlation Coefficients between the Death Rates and the Input Variables, for 18 Developed Countries.

	Mortality Rates by Age-Groups									
	MATERNAL	PERINATAL	INFANT	1-4	5-14	15-24	25-34	35-44	45-54	55-64
Doctors	0.45	0.60	0.67	0.37	0.42	0.32	0.23	0.04	-0.27	-0.20
% GNP on Health	-0.12	0.01	-0.10	-0.23	0.27	0.39	0.30	0.00	0.23	0.36
GNP per Caput	-0.29	-0.48	-0.46	-0.41	0.18	0.25	0.17	-0.13	-0.36	-0.53
Cigarettes	0.17	0.22	0.22	0.11	0.31	0.36	0.35	0.32	0.46	0.49
Alcohol	0.68	0.52	0.61	0.33	0.32	0.26	0.27	0.09	-0.18	-0.14
% of Health Expenditure by Public Sector	-0.15	-0.15	-0.02	-0.13	-0.12	-0.44	-0.48	-0.30	-0.26	-0.07

Source: Cochrane, A.L., St. Leger, A.S., and Moore, F. (1978) Health Service 'input' and Mortality 'output' in developed countries. Journal of Epidemiology and Community Health, 32, pp.200-205.

Special Note: Following personal communication with Dr. Cochrane, some mis-prints in Table 4 of the original article are corrected in the above table.

As Elinson* puts it in a paper reviewing the almost total failures of effectiveness revealed by the (very few) competently conducted evaluation studies over a 10-year period,

"Are the health and welfare professions really incapable of conceiving and implementing effective programs on a broad scale? I think these questions need some attention."

3. Planning Strategic Planning Strategy

Ansoff** has contrasted planned with trial and error approaches to the implementation of strategic planning. Although the latter has worked in the past, he concludes:

"...planned capability change can be advocated on the grounds of time saving, efficiency, and not necessarily higher social cost...reactive unplanned change requires more time than the environment permits."

His conclusions transfer easily to the public sector case under discussion. Again, he describes four commonly used "influence strategies" to implement the change; there are elements of three of them in the U.K. experience:

1. "In coercion strategy superior authority and power of the top management is used to enforce change." (The DHSS has told the authorities to plan, so basically this is the main strategy.)
2. "In contagion (or imitation) strategy top management picks a unit of the firm, which has either already gone through a process of planned adaptation, or is ready and eager to do so. This unit is given resources, encouragement and rewards. Typically other units will begin to imitate..." (The DHSS has funded joint research activities with co-operative authorities to assist their planning).
3. "Learning strategy exposes managers at all levels to the realities of their own environmental predicament..." (The prospect of rising numbers of very elderly persons has been energetically drawn to the attention of authorities in DHSS publications.)

(The crisis strategy, Ansoff's No.4, which uses threats to organizational survival, would scarcely be credible to a public health authority.)

* Elinson, J. (1967) Effectiveness of Social Action Programs in Health and Welfare. Reprinted in Weiss, C.H. (1972) Evaluating Action Programs; Readings in Social Action and Education. Allyn and Bacon, Boston.

**Ansoff, H.I. (1978) Corporate Capability for Management Change. SRI International Business Intelligence Program. December 1978, Research Report 610.

Perhaps most relevantly, Ansoff contrasts

"natural sequences in capability transformation in which every preceding step prepares and reinforces the following"

and

"Resistance generating sequences in which a step reinforces the resistance to further change".

He summarizes the former by

"VALUES → SKILLS → CAPACITY → INFORMATION → STRUCTURE → SYSTEM"

in which each step lays the groundwork for the succeeding one, and contrasts it with a typical sequence observed in firms

"SYSTEM → SKILLS → INFORMATION → STRUCTURE → CAPACITY → VALUES

In this sequence managers are first asked to act outside their competence, and to use irrelevant information within a structure which does not encourage the new system. As the deficiencies are uncovered through failure and frustration, remedies are introduced one by one."

The situation in the U.K. is apparently closer to the latter sequence in starting with the imposition of a system. The hope is that there will be parallel development of the necessary skills and information base, but this is optimistic and there are clear problems on both of these, as well as on capacity. Information in the specific context of the elderly, and some of the structural problems, are discussed in sections below. "Values" would represent the growth throughout the service of a widespread acceptance of normative forward planning and planned change as the means to more cost effective health care. This may well be the last step in the process, though clearly there are individual exceptions. But the momentum will have to be sustained from the centre for the next few years before one could hope to achieve continuing enthusiasm at all levels for strategic planning.

4. Structural Problems

There has been some concern that the U.K. health care system has too many tiers of authority, but that is an endless and doubtful argument--there are some good reasons for each tier. The large amount of consultation with professional bodies and community representatives probably absorbs much more time, and would not be reduced significantly by eliminating a level.

More serious is the difficulty, particularly in the care of the elderly, of making joint plans with the Social Services departments of local government bodies. These bodies have

many other responsibilities--e.g., education, housing, police, libraries--and are not so directly controlled by DHSS (except on specific statutory responsibilities)--particularly on such issues as making 10-year plans. But their activities interact strongly with some aspects of health care, particularly with the increased emphasis on domiciliary care.

A possible source of friction within the health service is the structure shown in Figure 2. The District Management Teams report to the AHA, while the Area Team of officers act in a staff, advisory role to it. In multi-district areas, the first efforts at strategic planning have typically been delegated by the Areas (formally responsible for Strategic Plans) to the DMTs (for their local views and experience). If there are disagreements between DMTs and ATO over the detailed content of plans, these cannot be finalized in day-to-day working meetings of the officers, but must await the next meeting of the health authority.

The purpose of de-centralization, and of consultations with the locally representative Community Health Councils in each district, is for the health service to respond to, and to be seen to be responsive to, locally expressed opinion. There are, however, so many activities in the service, so many options stretching out over a 10-year period which may be foreclosed unknowingly by current decisions, that it requires a fairly high level of both motivation and competence on the part of the health service officers to present an ideally balanced, comprehensive, clear and timely statement of the issues at stake. Supposing that a correspondingly wise and far-seeing council then points out a flaw in the plans, or expresses a different value judgment about some relative priority, it is again expecting much of the officers that they should then bow to the expression of opinion, re-work and re-submit their views. In fact in the absence of the ideal conditions postulated, and given the negotiating strength of professional interest groups, it is more likely that the need to compromise with them will be the dominant factor.

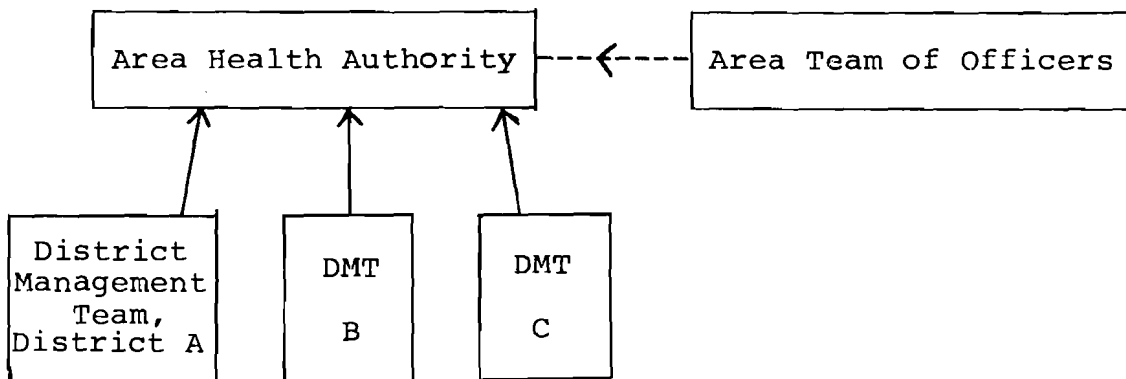


Figure 2: Relationship of Strategic Planning Participants to AHA

One might summarize this by the suggestion that a decentralized planning system, in the absence of clear information, capability and strong motivation in the local units, will simply preserve the status quo with the additional endorsement provided by the satisfaction of democratic appearances.

Two interesting suggestions have been made for a novel approach to structuring the planning of care for elderly.

In the DHSS 1976 Consultative Document, the ministry outlined the concept of "client groups", indicating how the total expenditure pattern could be analyzed by these groups, one of which comprised "services mainly for the elderly". A similar feeling at grass-root level has been expressed by members of the Joint Care Planning Team, comprising representatives of county social services department, local housing authorities and the area health authority. This inter-disciplinary, inter-authority group suggested the creation of a single agency with responsibility for care of the elderly.

A more radical extension of this, recognizing the lack of understanding which young and energetic professional people may display in regard to the elderly, was an informal suggestion that perhaps ways be explored to enable the elderly to plan for themselves. This suggestion could perhaps be developed in the U.K. context by enlarging the role of the National Council for the Care of Old People or similar voluntary bodies.

The concept common to both these suggestions is a recognition that there are needs and problems peculiar to old age which demand sympathetic understanding, and there are strategic developments with implications for the care of the elderly which require concentrated investigation, relevant research, and intelligent anticipation. The existence of such a service division within DHSS does not furnish sufficient independence of view or authority over resources to support the proposed concept.

5. Information and Research

The complexity of planning for health care services is well-known, as are some of the fundamental problems. Central to these are problems surrounding output measurement. We have reviewed a small fraction of the vast literature on this subject, looking particularly at measures relating to the health status of the elderly.

Most of the measures used in health care planning, budgetting and resource allocation concern inputs and intermediate outputs: money spent, resources provided, utilization of those resources. More problematical is the determination of "How healthy are you?", still more so "How much healthier are you as a result of the efforts of the health authority?" Leaving aside all the behavioral and statistical problems surrounding the subject, this comes down to an appraisal, either by the individual concerned or by a competent professional, of the status of the

individual. To translate such results to the community level requires one of the following sources of primary information:

- (i) Compilation of data from the individual case records of family practitioners.
- (ii) Screening, by interview and/or medical examination, of sampled individuals from the population.

Sample surveys based on the former have been carried out on a systematic basis in 1955/6 and 1970/71, but relate mainly to the use made of practitioner services rather than the health status of individuals. Other surveys have been too localized to be of other than local applicability.

Important surveys on nationally designed samples were published in 1971 (Amelia Harris) and 1978 (Audrey Hunt), the former to establish the general incidence of disability in the community (which included many elderly people), the latter specifically focussed on the elderly. These remain major sources of information. There is also a statutory obligation on local authorities to maintain a register of handicapped persons living at home. Most of the survey information sources relate to the population living at home. To use such information in the context of 10-year planning for a total population, one needs to take account also of the "institutional" population, in local authority homes, "sheltered" housing, and various types of hospital.

The Institute for Operational Research, part of the Tavistock Institute of Human Relations, in London, has been the one research centre which appears to have integrated the various sources of survey information, hospital-based and local authority data, to compile comprehensive estimates of the proportions of the elderly (i.e., over 65) population in various "social independence states". Their state definitions (abbreviated), and their estimates for the elderly population of England and Wales in 1970, are shown in Table 2. This illustrates that even the three very simple categorizations of ability in household and personal care, mobility, and mental state lead to $4 \times 4 \times 3 = 48$ possible states of the individual. Adding aspects of physical and social environment--e.g., the simple $2 \times 3 = 6$ categories listed, amplifies the possible "social independence states" for those living at home to $48 \times 6 = 288$.

It is clear that the aspects of health and environment listed in Table 1 are all directly relevant to the question of whether support of any sort is needed, and to the determination of the degree, frequency and form of assistance seen as necessary or desirable. Such data are the essential foundation for planning, and for the conduct of any research or monitoring that seeks to focus on outputs and effectiveness. It is regrettable that the research efforts leading to Table 1 do not appear to have been sustained, and the work has not been widely diffused amongst the authorities responsible for planning.

Table 2. Estimated Numbers of Elderly Persons by Social Independence State, England and Wales, 1970.

HOUSEHOLD AND PERSONAL CARE		(thousands)
0	Unimpaired	4,365
1	Impaired and Minor Handicap	1,007
2	Appreciable-Severe Handicap	680
3	Very Severe Handicap	174
		<hr/>
		6,226
		<hr/>
MOBILITY		
A	No difficulty	5,171
B ₁	Can get out of house with aids, or with difficulty, or with personal assistance	673
B ₂	Housebound, but can get around house	280
C	Chairfast or bedfast	102
		<hr/>
		6,226
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MENTAL STATE		
a	Normal	5,802
b	Mild dementia	211
c	Moderate or severe dementia	213
		<hr/>
		6,226
		<hr/>
PHYSICAL ENVIRONMENT		
Good Housing--Easy access to hot water and inside W.C.		4,274
Poor Housing--Not easy access to both		1,746
		<hr/>
		6,020
		<hr/>
SOCIAL ENVIRONMENT		
Living along		1,840
Living with spouse only		2,040
Living with others		2,140
		<hr/>
		6,020
		<hr/>
In institutions		206

Source: IOR 812 Revised: Central Planning: The Case of the Elderly. R. Harris and H.C. Wiseman, Paper presented to conference on Health Service Planning, Dundee, 24/25 September 1974.

The use of national survey data in conjunction with local population statistics can provide "synthetic estimates" for that locality of the number of persons in the locality in various degrees of need. Of course, these estimates have only provisional status, and should eventually be checked against locally generated data; but at the present time, some initial set of assumptions has to be made in planning. The more explicitly these assumptions are made, the more the process of strategic monitoring will be facilitated.

The concept of health status, as expressed by the IOR Social Independence States in Table 2 or otherwise, is one dimension of the resource allocation problem. The other dimension is that which describes the available types of provision or treatment. Figure 3 shows an idealized picture of the problem.

Categories of Need (increasing from left to right, insofar as they can be meaningfully ranked)

	1	2	3	4	5	6
Categories of Provision or Treatment, in order of increasing expense or intensity	1	⊙	*	*		
	2	+	⊙	*	*	
	3	+	+	⊙	*	*
	4		+	+	⊙	*
	5			+	+	⊙
	6				+	+

Key: ⊙ - "Appropriate" match of provision to need
 * - Need inadequately met: potential for improved service
 + - Need adequately but inappropriately met: potential for improved service and economy.

- Problems:
- (1) Need is not "one-dimensional"; but within certain categories (e.g., vision, mobility, ability to sustain independent living) it might be.
 - (2) Multiple combinations of provision may be relevant, by various agencies--e.g., health authority, social services department, housing authority, relatives and neighbours.
 - (3) Provision might be temporary or permanent--e.g., residential care or hip-joint replacement plus rehabilitation.
 - (4) Client status can be altered--indeed should be improved--by 'treatment'; may be altered adversely, even as a result of categorization itself.

Figure 3. Structuring the Allocation Problem

If consensus is obtainable on a ranking of states, from self-sufficiency and independence at best, to bed-fast and hospitalized dependence at worst, and if the thrust of current policy and expenditure is towards moving some of the clients in state N into state N-1 (or rather, avoiding their gravitating to state N in the first place), then measurable and definable objectives and forecasts may be expressed in the terms illustrated in Figure 4.

Further fieldwork and discussions are continuing to test the applicability of the conceptual framework and the IOR data in a specific context, and to compare their implications with the newly-completed Strategic Plan. Given, for example, the demographic forecast of increasing numbers of elderly, the resource implications of current allocation criteria may not be sustainable, and therefore some shifts will have to take place--e.g., more mentally confused persons in local authority homes than at present, or persons currently seen as requiring full institutional care who may have to be helped to maintain their independence at home. Of particular significance for observation and survey will be those individuals currently viewed as "borderline" between categories.

An aspect of strategic change to which the strategic monitoring system should be alert is the likelihood of long-term change in characteristics of succeeding age-cohorts, because of their different lifetime experiences. For example, it might seem desirable to provide all elderly persons living alone with a telephone; but unless they have been habitual users of the instrument during their younger years, this is not necessarily going to provide a usable communication link.

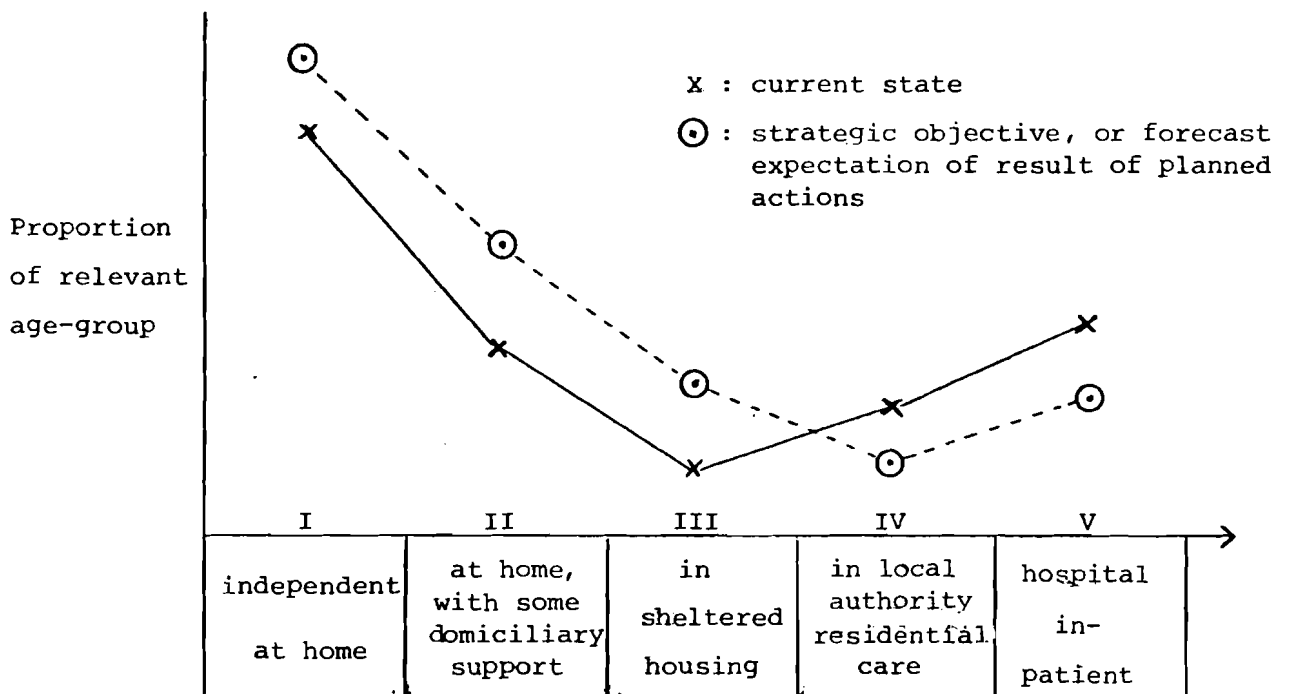


Figure 4. Developing Quantitative Structure of Objectives in Caring for the Elderly

6. Generalizations

It is too early in our work to come to firm conclusions, but it is our hope that some empirical experience will flesh out the principles outlined in the Research Memorandum. The RM assembled various indications of the ineffectiveness with which long-term societal learning is presently conducted in many fields. In health care, the biological stability of human populations, the would-be-rational basis of much of modern medical science and psychiatry, and the existence of sophisticated statistical tools for epidemiologists, should give basis for hope of rational action, and gradual improvement, via systematic planning.

The obstacles to such progress are numerous, some of them those behavioral and institutional aspects emphasized by Hofstede ("The Poverty of Management Control Philosophy", EIASM Working Paper WP-75-44). There is also some evidence of problems caused by disciplinary divisions, partially repeated within the organizational structure of DHSS, between epidemiological research, operational research or management science, and the efforts of those directing strategic planning at both central and regional levels. Allied to these divisions may be a lack of relevant experience amongst the staff responsible for planning in the lower tier authorities and districts. Clearly a continuing supportive and even directive role is required of central government.

Whether central government is being sufficiently supportive of effective strategic learning may be questioned, when one considers such issues as the failure to propagate uniform bases for description and categorization of the social independence and health status of the elderly. Of course, any early attempt at this might prove unsatisfactory; but the most rapid way to improve it would have been to try using a provisional basis. Instead, a much slower process of trial and error is allowed to proceed independently in each authority and a few research projects, with government confining its role to the issue of population data, chapter headings for the plans, and guidelines on resource inputs, unsupported by a related (and locally testable) rationale relating the guidelines to needs. The fear of error acts as an inhibitor of bold activity, and therefore of learning. The risks of omission may be less visible and more serious than the risks of commission.