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Managing Reforms on a Large Scale: What Role for OR/MS?

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In this paper evidence is presented regarding the degree to which social reforms have been systematically managed by the Public Sector in Greece between 1975–1992. The findings reported here concur with the findings of others that, by and large, in developing countries, important social reforms tend not to be systematically handled. A twofold explanation is advanced for what seems to be an inverse relationship between the importance of social reforms and the use of OR/MS techniques for their management. First, the subsidiary role of OR/MS techniques in both developing and developed countries is partly due to the conflict-ridden and complex nature of important social reforms, which are not as amenable to systematic analysis as small-scale reforms. It is also partly due to the competitive nature of liberal democracies which compels governments to use social policies not only in a problem-solving mode but also in a tactical mode. Secondly, the low degrees of bureaucratization and rationalization that characterize developing countries, in particular, account for seeing social reforms not so much as manifestations of rational calculation designed to solve problems but as political tools in the service of their masters. It is concluded that OR/MS may be useful in developing countries not so much for its techniques as for its ideology; not for what it is but for what it stands for.

Key words: developing and developed countries, OR/MS, management, politics, reforms

INTRODUCTION

The discussion concerning the use of OR/MS for the benefit of economic growth in developing countries has been fairly extensive. Examples are the work of Luck and Walsham¹, Jaiswal², JORS³, EJOR⁴, Kemball-Cook and Wright⁵, Papoulias⁶ and others. In these publications, the techniques used to tackle particular problems in developing economies have been explored. Quite often, recommendations derived from past applications have been put forward in order to facilitate more successful applications in the future (see Kurtulus⁷, Lee⁸, Smith⁹ and Papoulias and Darzentas¹⁰).

In particular, three recent papers by Bandyopadhyay and Datta¹¹, Sagasti¹² and El Sherif¹³ have offered new insights into the use of OR/MS in developing countries as diverse as India, Peru and Egypt. All three papers are concerned with the management of large-scale interventions introduced in the Public Sector in each of the above mentioned countries. What is interesting in these papers is that they go further than similar ones in the past (even papers by the same authors—see Bandyopadhyay¹⁴, Sagasti¹⁵ and El Sherif and El Sawy¹⁶) in discussing issues of great importance to developing countries: what areas or sectors ought to be chosen for development? How can this development be managed? What are the appropriate OR/MS techniques and methods to be effectively used? (see also Rosenhead¹⁷). There are not always clear-cut answers to these questions, but the experiences documented by the above authors help appreciation of the complexities and ambiguities involved.

Notwithstanding the thematic differences between the above papers, as well as the diverse socio-economic contexts within which the reported social reforms were attempted, there are also some striking similarities. The issues discussed by the authors were strategic at the global, national or regional level, usually involving high-level decision makers. The factors taken into consideration were not only economic, but also social or societal, and cultural. The time frame within which the results of several of these reforms could be assessed was rather long. The stakeholders were not only individuals or occupational categories but entire populations, or large parts of them. Thus, most of the problems that were tackled were of high complexity, interdependence and ambiguity. Although the vision of the decision makers involved was

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often clear and coherent, it was, however, inescapably generic and thus not easily susceptible to unambiguous operationalization. The OR/MS methods and techniques used in the reforms varied, but several of them were biased towards 'soft' approaches using mathematical models in an auxiliary manner. There seems to have been an awareness of the limits of traditional OR techniques and an emphasis on constructing multi-disciplinary, comprehensive frameworks incorporating issues which have traditionally been left out of mainstream OR. In developing countries, in particular, the reasons for not using 'hard' mathematical modelling were, in part, pragmatic: difficulties in obtaining reliable data, scarcity of specialist human resources, and institutional instability of policy-making agencies.

The purpose of this paper is to re-examine the experience of using OR/MS in the management of large-scale reforms in both developing and developed countries in the light of the extant literature, as well as in the light of a recent study, undertaken by the authors, into the systematic analysis of reforms in the Public Sector in Greece. More specifically, it is attempted here, first to explain our main finding (which echoes similar findings reported by the above-mentioned authors) that the management of important social reforms is usually not done systematically; and secondly to explore the likely forms that the contribution of OR/MS may take in the management of large-scale social issues in general, with an emphasis on the role of OR/MS in developing countries in particular.

The paper is organized as follows. In the next section, the findings of a study undertaken by the authors, into how systematically the management of social reforms in the Greek Public Sector was performed during 1974–1992, are reported. Subsequently, an attempt is made to explain these findings (as well as similar findings reported by others) by first examining the main features of different social reforms in the context of a general typology, and secondly by locating social reforms in their societal context and describing what is the influence of the context of developing countries on the use of OR/MS methods in the management of important social reforms.

(UN)SYSTEMATIC DECISION MAKING IN THE PUBLIC SECTOR IN GREECE

In this section, the findings of a study undertaken by the authors are reported, looking at the extent to which the Public Sector in Greece (both Central Government and Public Enterprises) has been using systematic procedures in making decisions regarding a variety of social issues. The period covered is 1974–1992. The issues considered belong to several sectors of the economy and they vary in magnitude, duration, and degree of realization. First, systematic decision making is defined and the issues involved are discussed on the basis of projects set up to operationalize social reforms. Then, an evaluation is undertaken to investigate the extent to which systematic decisions were made regarding preparation, actual decision taking, and application (i.e. the whole management procedure of the reforms).

Systematic decision making defined and projects evaluated

Decision making is considered to be systematic when the following factors are taken into account^{18–20}.

- (1) The strategic implications of a decision.
 - (2) Existence of a clear policy shown by operational goals.
 - (3) Consideration of economic and human resources to realize a decision.
 - (4) Consideration of stakeholders' views and reactions.
 - (5) Period of preparation via data gathering, consultation and analysis.
 - (6) Existence of a 'product champion'.
 - (7) Consideration of alternative scenarios.
 - (8) Use of specialized personnel.
 - (9) Use of analytic methods and techniques in structuring problems.
 - (10) Existence of feedback mechanisms during application.
 - (11) Existence of corrective mechanisms to act on feedback received.
- (The above list will be referred to as List A).

Data on 41 projects sponsored by the Greek Public Sector were collected. The evaluation of the extent to which the management of these projects had been systematic was performed (a) on the basis of numerical data collected from questionnaires that were completed by key individuals who were involved in the decisions concerned; (b) on interviews with people who were in charge; and (c) through the use of published documentation. In Table 1 all projects are listed in relation to the Ministry which had had the initiative. Dates denote the starting year of projects. The names used are those that have been used in the Greek context.

Below, by way of illustration, an idea is given as to what some of these projects involved. The projects described have been randomly picked.

TABLE 1. *Public sector projects in Greece (1974–1992)*

Ministries	Projects	No of projects
National Economy	1. National Council of Energy, 1975 2. Act of Parliament for Development 1116, 1980 3. Act of Parliament for Development 1262, 1982 4. Public Supplies, 1983 5. Program for Economic Stabilization, 1985 6. Council of Economic Experts and Group of Advisors to the Minister of National Economy, 1985 7. General Secretariat of Public Enterprises, 1985 8. Karatza's Group for Banking Reform, 1986 9. General Secretariat for National Statistics, 1986 10. Offsets, 1987 11. Act of Parliament for Development 1892, 1990 12. Privatisations, 1992 13. Program for Economic Convergence, 1992	13
Education	14. Reform of Higher Education, 1977 15. Reform of Higher Education, 1982	2
Industry	16. Organization for the Reconstruction of Industry, 1983 17. Greek Refineries of Aspropyrgos, 1983*	5
Urban Planning Environment & Public Works	18. General Secretariat for Research and Technology, 1985 19. Public Enterprise for Electricity, 1985* 20. Group of Advisors to the Minister of Industry, 1985 21. Public Enterprise for Planning and Housing, 1976* 22. Control of Pollution in Athens, 1980 23. Town Planning, 1985 24. Planning Organization of Athens, 1985* 25. Planning Organization of Thessaloniki, 1985* 26. Large Public Works, 1991	6
Health and Social Security	27. National Health Service, 1978 28. National Health Service, 1982	2
Transport & Telecommunications	29. Organisation for Urban Transport and Enterprise for Urban Transport in Athens, 1977* 30. Nationalization of Olympic Airways, 1977* 31. Privatization of Telecommunications, 1992	3
Agriculture	32. Group of Advisors to the Minister of Agriculture, 1982 33. Administration of Markets and Agricultural Products, 1983	2
Interior	34. Society for Local Development and Administration, 1985* 35. Local Government-Development of the Periphery, 1982	2
Employment	36. For the Democratization of the Labour Movement, 1982 37. Control of Group Dismissals, 1983 38. Ratification of the 135 International Labour Agreement, 1988	3
Finance	39. Zero Based Budget, 1979	1
Commerce	40. Public Supplies, 1988	1
Prime Minister	41. Economic Office, 1982	1
Total		41

*Projects carried out at Public Enterprises.

The project 'National Council of Energy', for example, includes efforts to develop policy on energy issues in Greece and persuade Greeks to reduce their usage of electricity. For this purpose, the Greek Parliament in 1975 voted an Act for the creation of a National Council of Energy within the Ministry of National Economy which was given the responsibility to implement the government policy on energy.

The project 'Act of Parliament for Development 1116' includes efforts to speed up economic development in Greece. For this purpose, the Parliament in 1980 voted the 1116 Act, in which procedures and incentives for investors were specified in order to realize the policy of economic development. This project was replaced in 1982 by the project 'Act of Parliament for Development 1262', which again was replaced in 1990 by the project 'Act of Parliament for Development 1892'.

The project 'Program for Economic Stabilization' includes an economic package involving import, monetary, fiscal, wage freeze and several other restrictions set up in 1985 in order to realize the policy of tackling serious macroeconomic problems in Greece. The program lasted for 2.5 years and it was stopped in 1987.

Finally, the project 'Group of Advisors to the Minister of Industry' includes a program set up in 1985 by the Minister of Industry aiming at the development and realization of a policy for the reform of Greek industry.

Results

Table 2 shows, first, the degree to which the factors of List A have been included in the 41 projects and thus the extent to which projects have been systematically managed, and secondly, the importance of these projects. Several projects can be considered as relatively systematic since the projects seem to satisfy more than half of the factors of List A, but only six satisfy all 11 factors. The majority of the projects (26 in total), satisfy a number of factors from four to nine, thus indicating that efforts were made for several projects to be systematic or quasi-systematic, while almost half of the projects (18 in total), satisfy three to six factors only (see Table 2).

Project importance expresses a combination of parameters, such as duration, impact, and economic resources involved, and it is meant to indicate the general impact the projects have had or tried to have. Twelve projects have been classified as highly important. An interesting conclusion to be drawn from Table 2 is that the most important projects satisfy fewer factors from List A than the less important projects. In other words, the more important a project is, the less likely it is to have been planned and implemented in a systematic manner. These findings are presented in summary form in Table 3.

Interviews undertaken by the authors with key individuals involved in the management of projects revealed that efforts to use systematic decision making in decentralized parts of the Public Sector, such as Public Enterprises (the latter are denoted by an asterisk in Table 1), have had more duration and stability. Two reasons appear to have been responsible for this. First, the public enterprises involved have had, by the standards of the Greek public sector, a tradition of relatively effective organization (see, for example, the Electricity Co and the Refineries). Secondly, compared with the rest of the projects in which government ministers were directly involved, public enterprises were relatively insulated from the intrusion of central government, thus being able to carry these projects out in a relatively independent and uninterrupted manner. These findings echo similar findings by other researchers who also found that, in large business organizations, the chances of successful management of change are significantly higher when change initiatives are initially launched and carried out locally and are only later spread to the entire organization (see Beer *et al.*²¹, Kanter²², and Goodman and Dean²³).

The reasons for the interruption or abandonment of several projects were, in a broad sense, political. For example, change of Cabinet ministers or CEOs of Public Enterprises, abrupt reversal of government policies, etc. Given that most of the projects reported above were encouraged or supervised by ministers, changes in the political landscape were reflected in direct interventions in the projects themselves.

TABLE 2. Projects related to factors included and importance

Projects	Factors included in decision making											Total	Importance
	1	2	3	4	5	6	7	8	9	10	11		
1.	*	*	*	*	*	*	*	*	*	*	*	11	Low
2.	*	*						*	*			4	Medium
3.	*	*						*				4	Medium
4.	*	*	*	*		*		*		*	*	8	Low
5.	*	*	*		*		*		*	*		7	High
6.	*	*			*	*	*	*				7	Low
7.	*				*							4	High
8.	*	*	*	*	*	*	*	*	*	*	*	11	Low
9.	*	*	*	*	*	*	*	*	*	*	*	11	Low
10.	*	*				*		*				5	Low
11.	*	*						*				4	Medium
12.					*	*						3	High
13.					*							2	High
14.				*	*			*				4	High
15.				*	*			*				4	High
16.	*							*				3	High
17.	*	*	*	*	*	*	*	*	*	*	*	11	Low
18.	*	*	*	*	*			*		*	*	8	Medium
19.	*	*	*	*	*	*	*	*	*	*	*	11	Low
20.	*	*			*	*	*	*				7	Low
21.	*	*	*		*	*	*			*	*	9	Low
22.					*	*						3	High
23.	*	*						*				5	Medium
24.	*	*	*	*	*			*				7	Low
25.	*	*	*	*	*			*				7	Low
26.	*	*										3	High
27.	*	*			*	*		*				6	High
28.					*	*		*				4	High
29.	*	*	*	*	*	*	*	*	*			10	Low
30.	*	*			*			*	*			6	Medium
31.	*					*						3	High
32.	*	*			*	*	*					7	Low
33.	*	*	*	*	*			*	*		*	9	Low
34.	*	*	*	*	*	*	*	*	*	*	*	11	Low
35.	*					*						3	Medium
36.	*	*			*	*		*				7	Medium
37.	*	*			*	*		*				7	Low
38.	*	*							*			3	Medium
39.	*	*	*	*	*	*		*				7	Medium
40.	*	*	*	*		*		*		*	*	8	Low
41.	*	*	*	*	*			*	*	*	*	9	Low
Total	33	30	19	17	30	23	12	38	14	32	15		

TABLE 3. Factors included and their relationship with importance of projects

Factors	No of projects	Importance
All	6	Low
10	1	Low
9, 8 or 7	15	Mostly low
6, 5 or 4	11	Mostly medium and high
3	7	Mostly high
2	1	High

Systematic decision making and success of reforms

In this study, a cross-sectional set of projects has been presented, and although the projects were followed through time to examine the extent to which they used the list of factors defined as being indicative of systematic decision making, this study was not longitudinal in its orientation. This means that, for the purposes of this paper, projects were not followed to the end to establish their degree of success. If, however, one accepts the commonly held

assumption that systematic decision making tends to lead to the successful completion of projects of social reform (an assumption, for example made by Sagasti¹², El Sherif¹³ and others) then, from the data presented here, it appears that the most successful projects are those which are of low-to-medium importance, since these are the projects that tend to attract most factors listed in List A (see Table 3). This finding echoes a similar one by Goodman and Dean²³ who also found that, in large business organizations, the persistence of organizational changes is much more likely when these changes are relatively well circumscribed and congruent with the existing management philosophy and structure. In other words, it appears that the less a reform project disturbs the status quo (and therefore the less important it is to the social unit in the context of which the reform is carried out) the more likely it is to succeed.

To sum up, in this study it has been shown that systematic decision making tends to be associated with projects of low importance. It is in these projects where the factors of List A are mostly found. It is worth stressing that as project importance increases, systematic decision making tends to get worse. Conversely, reform projects on highly important economic and social issues have been found to be less systematic (see Papoulias²⁴).

DISCUSSION

The results reported in the preceding section support Rosenhead's¹⁷ similar findings, namely that the systematic analysis of important social issues carried out by the British government has been remarkably impoverished during the 1980s. Similar claims made by Bandyopadhyay and Datta¹¹ and Sagasti¹², further confirm the limited use of systematic procedures in decision making in the Public Sector in developing countries. However, this convergence of claims has not been matched by an attempt to explain the phenomenon of unsystematic decision making in the management of social reforms. The question that has not been adequately explored is: why is it that very often important social issues, which usually belong to the jurisdiction of regional or national governments, do not receive the appropriate analytical support one would expect? Or, to put it in different terms: why does the importance of a social issue seem to be inversely proportional to the systematic decision-making treatment it usually receives? To answer this question there is a need to examine the nature of projects attempting to promote significant social reforms and, second, to contextualize the question by looking at the distinctive features of the societal contexts within which social reforms are promoted.

A typology of social reforms

Social reforms vary along two dimensions: first, the degree of conflict which a particular reform attracts, and secondly, the degree of complexity characterizing a reform (see Pava²⁵). Conflict can be low or high depending on the extent to which there is a diversity of values, views, and interests among those who are affected by a reform. Conflict can be centred on the objectives of the reform, the means for achieving it or the very definition of the problem which a reform seeks to remedy. The complexity of the issues involved in a reform depends on how analytically tractable is a particular problem. The more discrete, stable and isolatable problems are, the more analysable they will be. Conversely, the more messy, ill-structured, volatile and inter-dependent problems are the less analysable they will be. Combining these two dimensions we obtain a typology of social reforms (see Table 4).

Traditional OR/MS techniques have tended to concentrate on problems in the 'rational planning' quadrant (see also Rosenhead²⁶ and Jackson and Keys²⁷). Most important social issues, however, fall in one of the remaining three quadrants. In situations in which problems may be of low complexity but high conflict, such as, for example, is the case of several welfare-related problems concerning social security and pensions, it is usually political skills and the consequent ability of the government to build coalitions supporting reforms that is crucial. 'Hard' OR/MS techniques form the infrastructure on which analytically informed

TABLE 4. A typology of social reforms

	<i>Rational planning</i>	<i>Heuristic planning</i>
Low Conflict	<ul style="list-style-type: none"> • Budgeting • Forecasting • Production control problems 	<ul style="list-style-type: none"> • Urban planning • Productivity problems
High Conflict	<i>Political interventions</i>	<i>Ill-defined experimentation</i>
	<ul style="list-style-type: none"> • Bargaining • Coalition-building 	<ul style="list-style-type: none"> • Large systems change
	Low Complexity	High Complexity

Source: Adapted from Reference 25.

political moves can be made; but these techniques, on their own, can hardly deliver enduring solutions.

In situations where low conflict surrounding the issues at hand combines with high complexity, problem definition is of paramount importance. Given the low conflict of these cases, 'soft' methodologies—for structuring the participation of various stakeholders and helping them to clarify and articulate what is desirable and feasible—are usually preferred. Finally, questions of fundamental importance such as the creation of a federal European Union, significant interventions in the economy through either *laissez-faire* or corporatist legislation, etc, are not only analytically difficult to handle but also inherently conflictual for they strongly depend on basic assumptions about the functioning of society and its institutions. This is the case where trial-and-error is inevitably used and questions of visionary leadership, the management of symbols, and media management in general, are important.

If the above typology is accepted, it follows that the more important social issues are, the more likely it is that they will be complex and conflict-ridden. Consequently, such issues will be more difficult to structure in a consensual manner and thus the utility of OR/MS techniques will, of necessity, be limited and certainly subsidiary to political and symbolic processes²⁸. We are now, clearly, into the realm of Politics proper. Politics thrives on ambiguity and the impossibility of grounding our policies towards social institutions on objective, unchallengeable knowledge²⁹⁻³¹. Tackling important social issues cannot be reduced to a mere technical analysis, not only because such issues are inherently complex and inter-dependent, but also because they inevitably rely on arational assumptions and beliefs about the constitution of society which are bound to be conflictual³². When inherently conflict-ridden issues are placed within the context of competitive political systems one realizes that policy making on such issues is hardly ever a disinterested rational debate but is rather a ploy for obtaining victory over political opponents³³.

It is at this point that, despite its several strengths, Rosenhead's¹⁷ analysis is weak, for he assumes that rational analysis somehow operates in a vacuum and is, by itself, sufficient to settle arguments about policy making. Based on what has been said above this is rarely the case. Rational debate usually takes place within a competitive political system in which a government elected to enact a particular set of policies must plan its strategy in such a way as to overcome the inevitable reactions of its opponents. This cannot be done only via the force of the better argument, but also by political manoeuvring and persuasion. It is no good, therefore, for Rosenhead to criticize the British government for not having conducted research on the attitudes of parents towards local authority schools before making its decision to let schools opt out from local authority control. Even if such research had been done and had revealed negative attitudes on the part of parents, the government could still ignore them and stick to its policy in the hope that, in time, and with some persuasion tactics, these attitudes could be reversed. Governments appear to understand that public opinion is malleable and, solely on its own, is rarely a guide for policy making. In short: 'make the reforms first, shape public opinion later' could well be a very rational approach for a government to adopt. The fact that it does not always work does not mean that it never works.

Thus, while rational analysis helps policy makers in the collection of evidence and provides them with theories for choosing ways of action, it is never self-sustaining. Policy makers embarking upon important social reforms are guided by social philosophies and broader bodies of experience and knowledge, which provide the interpretative filters for making sense of empirical reality and choosing between courses of action (see Toulmin *et al.*³², for an analysis of the structure of rational arguments and the inherent dependence of the latter on non-empirically verifiable—and, therefore, ‘arational’—modes of understanding). Thus, it is a sensible conclusion to draw that although OR/MS methods are helpful in the analysis of important social issues, their nature is such that these methods will, by necessity, have a subsidiary role in effective policy making. The extent to which policy makers are guided by a coherent social philosophy, have sophisticated political skills and are skilful in reframing people’s experience in a way that is meaningful to them, appears to be far more important in effective policy making than a detached rational analysis.

The societal context of social reforms

In this section, a distinction is drawn between developing and developed countries, for such a distinction will give a better understanding of the status that OR/MS methods are accorded in developing countries in general, and will thus help interpret the earlier findings.

For this purpose, the chief difference between developing and developed countries is their level of industrialization and the concomitant degree of bureaucratization and rationalization. As Weber³⁴ so insightfully foresaw, industrial societies are synonymous with the emergence and dominance of bureaucratic organizations and the spread of rational calculation over social life. This process has been accompanied by the functional differentiation of industrial societies and the consequent emergence of a relatively autonomous economic sphere, in combination with the development of civil society acting as an intermediary between the individual and the state³⁵.

Developing economies are not, by and large, permeated by the same degree of rational calculation, but rather, their functioning is legitimated by traditional modes of behaviour, political expediencies, and charismatic forms of leadership. Nor do developing economies display the same degree of functional differentiation: the state is usually directly involved in economic activities while the meagre presence of civil society further underlines the dominant presence of the state in most spheres of socio-economic life³⁶. The overpowering presence of the state results in the dominance of overt political considerations over detached rational calculation in designing important social reforms.

Thus, the weak basis of rational calculation entails the relative underestimation of scientific modes of thinking and the reliance on habitual-cum-uncritical forms of tackling problems. At the same time, the dominance of political considerations implies that decision making is geared towards serving directly political aims rather than initiating policies that might prove unpopular. This explains, to some extent, the frequency of reforms on the same issues, often introduced by the same governments. Reforms are often undertaken in order to give the appearance of freshness, and to gain favour with particular constituencies inside and outside the government. In that sense, such reforms are in no great need of systematic analysis nor of a coherent social philosophy.

It must be noted that in developing countries it is the logic of the wider social system that relegates rational calculation in favour of direct political expediencies, which influences the design and overall management of social reforms. The low bureaucratization also implies the absence of institutional memory from such societies^{12,37}. If rational calculation is not the common denominator guiding policy making then habitual, idiosyncratic, politically motivated interventions are the preferred substitute. Moreover, the politicization of the state implies that every time the government changes, the most senior policy makers in the civil service and the Public Sector also change, thus leaving very few traces of what Engestrom *et al.*³⁷ call ‘primary remembering’ in the system. If one adds to this the relatively high degree of political polarization between political parties and their clientelistic organization that accompany the atrophy of rational calculation, one realizes that ‘secondary remembering’ is also rare: particular reforms are not connected to a commonly shared history of tackling certain issues,

with the result that policy makers are unable to relate their own actions to those of their colleagues or opposite numbers.

In the context of developing countries, OR/MS methods and the associated mode of thinking they imply appear relatively remote: in the short term, it is more ‘rational’ for politicians to act haphazardly, satisfying key constituencies through the clientelistic use of the Public Sector rather than engaging in a systematic analysis of social issues, which takes time. The latter implies a relatively disinterested handling of social issues, and often leads to politically unpopular conclusions.

CONCLUSIONS AND FURTHER RESEARCH

Evidence in the literature that OR/MS has been used in a rather unconventional way in countries like India, Peru and Egypt for tackling social and economic reforms has been discussed in this paper. Additional new evidence has been presented here that social reforms in Greece, undertaken by the government or the Public Sector between 1974–1992, have been lacking a systematic approach. Conversely, relatively minor reforms appear to have been more systematically approached. These findings concur with similar ones presented by Bandyopadhyay and Datta¹¹, Sagasti¹² and Rosenhead¹⁷. An attempt has been made here to explain this phenomenon, and the explanation advanced consists of two parts.

First, important social reforms tend to be conflict-ridden and complex, and are thus not easily amenable to systematic analysis. Having such a nature, the success of important social reforms seems to hinge more on the articulation of a coherent social philosophy along with the existence of political and symbol-management skills on the part of policy makers than on merely systematic analysis. Although the latter has certainly an important role to play, this role is limited and confined to serving ancillary functions. The subsidiary role of OR/MS methods is also due to the competitive character of liberal democratic systems. In the latter, social reforms are part of a competitive process of outdoing opponents, hence strategies for tackling important social issues are not always the result of rationally conducted debates but sometimes also ploys, tactically employed, for defeating rivals. Sometimes a systematically prepared policy may contradict its use in a tactical manner for neutralizing opposition. Faced with a dilemma, governments in competitive political systems are structurally impelled to opt for policies-as-ploys rather than for strategies systematically prepared.

Secondly, there is a need to distinguish between the societal contexts in which social reforms are promoted, for the context has a decisive influence on their manner of management. In developing countries, the dominance of the state in most spheres of social life and the consequent politicization of most social issues, in combination with the low degree of rational calculation that exists in such societies, imply the volatility of social reforms and their use as instruments for political gain rather than as instruments for solving problems. While the rational calculation prevailing in developed countries implies that governments ought to be managing social issues in a more or less rational manner, the overpoliticization that characterizes developing countries implies that the reputation of governments is significantly dependent on directly satisfying key constituencies through politically motivated reforms.

In such a context, the systematic analysis offered by OR/MS methods is underestimated and is probably regarded as a nuisance, for it may point to politically unfavourable conclusions. In that sense the usefulness of OR/MS is not so much the particular techniques it offers but the ideology it promotes: rational calculation and detached analytical thinking are better than uncritical habitual behaviour, and corrupt and nepotistic practices. In developing countries, OR/MS is a force for the rationalization and modernization of these societies, and its contribution ought to be acknowledged as such. As argued earlier, OR/MS’s role may be limited to helping decision makers manage important social issues, in both developing and developed countries but, in developing countries in particular, it is what OR/MS stands for that is important and less its actual contribution to solving important social problems.

Future research on how formal OR/MS methods have been used to address complex

societal problems may reveal the conditions that either frustrate or facilitate the actual utilization of OR/MS methods in particular societal contexts. Detailed case studies, for example, of particular large-scale reforms (e.g. privatization in Eastern European Countries, industrial re-structuring, etc) will be particularly useful in showing how the complexity and ambiguity inherent in social problems are addressed, and how OR/MS methods are socially used in particular socio-economic contexts.

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REFERENCES

1. G. M. LUCK and G. WALSHAM (Eds) (1982) *Selected Readings in OR for Developing Countries*. Operational Research Society, Birmingham.
2. N. K. JAISWAL (Ed.) (1985) *OR for Developing Countries*. Operational Research Society of India, New Delhi.
3. JOURNAL OF THE OPERATIONAL RESEARCH SOCIETY (1986) Special issue on Operational Research in Developing Countries **37**, 109–221.
4. EUROPEAN JOURNAL OF OPERATIONAL RESEARCH (1990) Special issue on Operational Research in Developing Countries **49**, 155–294.
5. D. KEMBALL-COOK and D. J. WRIGHT (1981) The search of appropriate OR: A review of OR in developing countries. *J. Opl Res. Soc.* **32**, 1021–1037.
6. D. B. PAPOULIAS (1984) OR and socioeconomic development. *J. Opl Res. Soc.* **35**, 579–586.
7. K. KURTULUS (1983) Computer usage and employment of OR techniques in Turkish industrial firms: A survey study. *Eur. J. Opl Res.* **14**, 329–334.
8. S. J. LEE (1986) Management Science in the Republic of China (Taiwan). *J. Opl Res. Soc.* **37**, 187–194.
9. D. K. SMITH (1987) OR in developing countries: The example of Jordan. *J. Opl Res. Soc.* **38**, 577–584.
10. D. B. PAPOULIAS and J. DARZENTAS (1990) OR in Greece: Myth and reality. *Eur. J. Opl Res.* **49**, 289–294.
11. R. BANDYOPADHYAY and S. DATTA (1989) Strategies for backward-area development: A systems approach. *J. Opl Res. Soc.* **40**, 737–751.
12. F. R. SAGASTI (1990) From global modelling to national comprehensive models: A developing country perspective on global modelling in transition. *J. Opl Res. Soc.* **41**, 185–190.
13. H. EL SHERIF (1990) Managing institutionalization of strategic decision support for the Egyptian cabinet. *Interfaces* **20**(1), 97–114.
14. R. BANDYOPADHYAY (1989) OR applications in industry and problems of industrialisation of a developing economy with special reference to India. *J. Opl Res. Soc.* **31**, 769–780.
15. F. SAGASTI (1976) Thoughts on the use and abuse of OR/MS in the planning and management of development. *J. Opl Res. Soc.* **27**, 937–948.
16. H. EL SHERIF and O. EL SAWY (1988) Issue-based decision support systems for the Egyptian cabinet. *MIS Q.* **12**, 550–569.
17. J. ROSENHEAD (1992) Into the swamp: The analysis of social issues. *J. Opl Res. Soc.* **43**, 293–305.
18. S. EILON (1979) *Management Control*. Pergamon Press, London.
19. C. EMMANUEL and D. OTLEY (1985) *Accounting for Management Control*. Van Nostrand Reinhold, Wokingham.
20. D. HICKSON, R. BUTLER, D. CRAY, G. MALLORY and D. WILSON (1986) *Top Decisions*. Blackwell, Oxford.
21. M. BEER, R. A. EISENSTAT and B. SPECTOR (1990) Why change programmes don't produce change. *Harvard Bus. Rev.* **68**, 158–166.
22. R. M. KANTER (1983) *The Change Matters*. Unwin, London.
23. P. S. GOODMAN and J. W. DEAN (1982) Creating long-term organizational change. In *Change in Organizations* (P. S. GOODMAN, Ed.) pp. 226–279. Jossey-Bass, San Francisco.
24. D. B. PAPOULIAS (1990) Systematic decision making in the Public Sector in Greece. In *Operational Research '90* (H. E. BRADLEY, Ed.) pp. 73–83. Pergamon, Oxford.
25. C. PAVA (1986) New strategies of systems change: Reclaiming nonsynoptic methods. *Human Relations* **39**, 615–633.
26. J. ROSENHEAD (1989) *Rational Analysis for a Problematic World*. Wiley, Chichester.
27. M. C. JACKSON and P. KEYS (1984) Towards a system of systems methodologies. *J. Opl Res. Soc.* **35**, 473–486.
28. L. BOLMAN and T. DEAL (1991) *Reframing Organizations*. Jossey-Bass, San Francisco.
29. C. CASTORIADIS (1987) *The Imaginary Institution of Society*. Polity Press, Cambridge.
30. A. MACINTYRE (1984) *After Virtue*. University of Notre Dame Press, Notre Dame.
31. K. POPPER (1982) *The Open Universe*. Hutchinson, London.
32. S. TOULMIN, R. RIEKE and A. JANIK (1984) *An Introduction to Reasoning*. Macmillan, New York.
33. H. MINTZBERG (1987) The strategy concept I: Five Ps for strategy. *California Mgmt Rev.* **30**(1), 11–24.
34. M. WEBER (1947) *The Theory of Social and Economic Organization*. Free Press, New York.
35. P. BERGER (1987) *The Capitalist Revolution*. Gower, Aldershot.
36. N. MOUZELIS (1992) Institutions and political culture. *To Vima*, 23/8/1992, pp. 10–11 (in Greek).
37. Y. ENGESTROM, K. BROWN, R. ENGESTROM and K. KOISTINEN (1990) Organizational forgetting: An activity-theoretical perspective. In *Collective Remembering* (D. MIDDLETON and D. EDWARDS, Eds) pp. 139–168. Sage, London.