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Evolution and Prospects

Edited by
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Evaluation in Planning

Evolution and Prospects

Contributions in honour of Nathaniel Lichfield

Edited by

E. R. ALEXANDER

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and APD, Tel-Aviv, Israel*



Routledge

Taylor & Francis Group

LONDON AND NEW YORK

First published 2006 by Ashgate Publishing

Published 2016 by Routledge

2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

711 Third Avenue, New York, NY 10017, USA

Routledge is an imprint of the Taylor & Francis Group, an informa business

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British Library Cataloguing in Publication Data

Evaluation in planning : evolution and prospects. - (Urban and regional planning and development series)

1. Planning - Evaluation

I. Alexander, Ernest

307.1'2

Library of Congress Cataloging-in-Publication Data

Evaluation in planning : evolution and prospects / edited by E. R. Alexander.

p. cm. -- (Urban and regional planning and development series)

Includes bibliographical references and index.

ISBN: 9780754645863 (hbk)

1. City planning--Evaluation. 2. City planning--History. 3. City planning--Cost effectiveness. 4. City planning--Environmental aspects. 5. City planning--Social aspects. I. Alexander, Ernest R. II. Series: Urban and regional planning and development.

HT166.E94 2006

307.1'216--dc22

2005034778

ISBN: 9780754645863 (hbk)

ISBN: 9781315581200 (ebk)

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PREFACE

Evaluation, Between Past and Future

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This book deals with ideas and practices that have been deeply influential on the careers of many people, including myself, and which are still current among and influential on new generations of planners. Much of the intellectual and professional apparatus that the world's planners can use in building new ways forward comes from the lifetime work of Nathaniel Lichfield. In recognition of Nat's significant contributions of ideas and exemplary practice, this book offers an overview of the evolution of theory and practice of evaluation in planning, a sampler of current best practice, and some directions for the future.

THE PAST: WHERE HAVE WE COME FROM?

The story begins with the post-Second World War political culture of Keynesian economics, welfare-oriented social policy and its counterparts in urban and regional planning-modernisation, efficiency and egalitarianism (albeit, sometimes rather paternalistic).

In this phase the economist, planner, engineer and surveyor Nathaniel Lichfield was a campaigner and innovator:

- for planning,
- for rationality,
- for informed public decisions,
- for reconciliation of efficiency with equity, and for a kind of “peace process” between plan and market.

Not revolutionary, but part of trying to forge the “historic compromise” between capital and labour, grappling systematically with the issues of externality and public good which have always been the essence of spatial planning and development.

Conflict, however, was not just between capital and labour, but also involves land, because of the integral role of land in everything to do about efficiency and equity in urban development. Land is so often a major barrier both to efficiency and to equity, and land ownership rights embody spillovers and relational dimensions.

In our local British context Nat's work also started as a quest for peaceful coexistence between the RICS and the RTPI, between the culture of landed property and the culture of a public interest, of efficiency and of redistribution. In this period, up to perhaps the mid 1970s, Nat's contribution and all his developments in Cost Benefit Analysis, and the Planning Balance Sheet, were the leading edge of progressive planning. His ideas on planned development and evaluation in planning (see the bibliography of his publications below) were highly influential and stimulated practices followed by local and national practitioners in the UK and in an increasing number of other countries around the world.

Then came the breakdown of that post-war compromise, attacked from two directions: by capital for what was seen as its draining effects on profitability, and by many citizens for its paternalism or for its unquestioned pursuit of modernisation. Rational comprehensive planning came to grief both from the right (at the hands of the Thatchers and Reagans) and from the left and others, at the hands of conservationists and bottom-up action by communities in Covent Garden, Napoli and elsewhere.

We entered a long dark period in which financial accountancy triumphed over rationality, over informed democracy and over transparency in decisions. During the 1980s and well into the 1990s the orthodoxy of governments, reflected in the dominant behaviour of many professionals, pushed financial viability issues to the fore, comprehensive planning, social costs and consistency to the background.

THE PRESENT

Out of that period, however, have come some contradictory tendencies, so that many people find it hard to know which way we are going, and what we can do about it in planning, land policy, evaluation and public decision-making.

On the positive side we have:

- Some backlash against unbridled capitalism – at one scale the challenges in Seattle, Davos and Porto Alegre; at the other extreme Agenda 21, the green movement in localities and – at least in some countries – citizen groups empowering themselves a bit faster than their governments would like.
- Within the state orthodoxy of European and North American government we have the whole Environmental Impact movement, which has its positive sides – although it sometimes seems just another free lunch for consultants, after which honour is satisfied and their report is shelved.
- We also have the Freedom of Information Act in the USA, the Human Rights laws in the EU and some moves towards audits and transparency, which look like a boost for some aspects of democracy in decision making.

On the other hand there are at least two strongly *negative factors* we have to contend with. One is the awesome power of deregulated market capitalism in the world, somewhat muted and regulated in Europe, less so elsewhere. The other is

the extraordinary fragmentation of government structures, budgeting systems and decision-making afflicting our public life, at least in Europe.

Gone are the days when public authorities could plan around dependable revenue flows from above, or predictable relationships with local citizens, land-owners and developers. They must now compete and bid for resources – juggling their objectives and priorities to match the flavour of the month in London, Brussels or Paris. And in their local operations they are bargaining ad-hoc deals on local developments with every significant project that comes up.

In this context, what are the prospects for systematic planning, coherent development of evaluation criteria and consistent evaluations? These are some of the issues that we confront in our work, though the list certainly omits misses some crucial ones.

THE FUTURE

What are the pointers for the future?

- Urban planning (a shorthand to include regional planning, rural as well as urban areas) is fundamentally a social process, not a purely technical one. That is to say it is a process in which people interact, pursue interests and seek compromises and agreements.
- Involving concepts of individual, group and collective interests, the public interest and debates about them, planning can and should form part of a process in which we all, as citizens, become better informed about possible futures and about each other. It should be part of an adult and self-governing society, with transparent procedures.
- Planning can and should be part of the whole way societies manage themselves, allocate resources, check, monitor and assess what is going on and then reconsider their options.
- In this context there are (or should be) evaluation processes within all stages of action. We may be at a point where we can concentrate on the relationship between ex-ante evaluation, continuing evaluation of activity and ex-post evaluation and on increasing clarity in the mapping of impacts and distributional patterns of outcomes.
- We are unlikely to re-enter a world of comprehensive integrated plans, cascading down from centre to locality, and with predictable implementation mechanisms. Patchy progress towards devolution in governance systems, alongside continuing concentration of power in the private sector will pull in opposite directions.
- In this context we should prioritise the search for transparent techniques which seek to reconcile conflicting sets of objectives and priorities in urban planning and management, some coming “down”, others coming “up”. And if they cannot be reconciled then our planning practices as a whole – and

evaluation methods within them – should at least aim to illuminate and clarify democratic debates.

- Finally, land. Many theorists and practitioners seem to be making progress in modifying the worst effects of land ownership upon planning – notably through tackling environmental externalities: internalising them through law or taxation. This is all highly valuable. It may, however, leave unresolved the acute problem in big cities whereby the land and property markets transmit and exacerbate inequalities through competition for scarce space.

THIS BOOK

Much of the intellectual and professional apparatus, which the world's planners can use in building new ways forward, comes from the lifetime work of Nathaniel Lichfield. The idea for this book came to me in recognition of the evident need to celebrate Nat's work on the occasion of his eighty-fifth birthday. Accordingly I organized an international seminar at the Bartlett School in University College London – where Nat taught generations of students – in February 2001. Leading exponents and followers of his work in evaluation and planning presented and discussed papers at a three-day workshop that enabled production of this book. These papers were updated and finalised to form the chapters below, together with some contributed by authors who could not take part in the London meeting. The division of the book into two sections, History and Theory, and Applications in Practice, reflects Ernest R. Alexander's editorial stimulus and guidance. Its structure is intended to at once respond to and integrate the diversity of the contributions, which mark where we have got to and show some of the ways in which we are going.

Introduction

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Chapter 1

Evolution and Status: Where is Planning-Evaluation Today and How Did It Get Here?

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ANTECEDENTS

Evaluation is not something new: it has always been an intrinsic part of decision making. Whenever a reasoning actor undertakes a particular course of action, some consideration and assessment of the possible consequences, however intuitive it may be, is an inevitable preliminary to the commitment.

This applies to any decision even in its simplest go-no-go form: Should Nguyen sail his boat out shrimp-fishing this windy morning? Should Maria take the promotion to District Manager she has been offered, with its transfer to Reykjavik? Should the Kungs order the \$1000 “Home Cinema” they saw on the Internet? Should the Branch Manager of the Universal Bank denounce the trader who has just lost \$5 billion of the bank’s assets? Should the squadron commander order a helicopter to rocket the village from which insurgents attacked his army’s convoy? Should the Finance Minister approve the proposed agreement with the IMF that the Governor of the national bank has sent over for her signature?

Over time commercial investors, entrepreneurs, businesses and managers developed more sophisticated tools to help them make informed decisions. These enabled them to evaluate the potential profitability of a prospective project, the simple criterion for any market enterprise. But basing public investments solely on their potential for raising revenue is clearly poor judgment. Indeed, through many centuries – from the pyramids of Pharaoh through Mayan temples and even the Roman roads – profitability was not even a relevant public investment consideration.

More recently state authorities came to include the money they could make among prospective projects’ significant benefits, as Baron Haussman did in promoting his Paris boulevard plan (Saalman, 1971). But even then, and still today, public officials recognize that there is more to considering whether to implement a particular plan

or project than just its fiscal impact and the direct revenues it could generate for the treasury.

While public investment analysis was not even in its infancy – it was still unimaginable – city planning was a mature activity, if not in the form we know today. Contrary to myths of the “organic” or “spontaneous” city, significant parts of towns and cities in the world’s higher cultures and civilizations (for example, the palace and temple complexes that were the core of Bronze Age, Classic, and Pre-Columbian cities) were planned, and sometimes entire urban settlements (e.g. some Greek and Hellenistic cities, Cambodian, Chinese and Japanese capitals, European Baroque capitals, and colonial capital cities) and even regional settlement systems (the Indus River civilization’s cities, the Roman “castrum” settlements, the medieval French “bastides” of Languedoc, the Spanish colonial settlements of Latin America) were designed and built from plans.

But none of this planning involved any evaluation, in the sense we understand it today. Indeed, this was quite a different form of planning than the complex of activities involved in city planning as we know it. Traditional city planning, in its broadest sense, might begin with settlement location (sometimes involving pseudo-sciences such as geomancy), continued with the architectural and urban design of the complex, quarter or city and elements of its infrastructure, included the organization and institutionalization of their construction and maintenance, and sometimes even regulation and administration of cities’ operation (for example, the regulation of building heights and chariot traffic in Imperial Rome) (Alexander, 1992: 15-20).

In more advanced cultures (e.g. Rome and the European Renaissance) many of these planning-related activities were quite formalized and systematized, with textbooks of architectural design and engineering construction, handbooks for administration, etc. But the model of the rational planning process that subsumes all the modern planning and design professions and “decision sciences” was still in the distant future, and its closest predecessor, Patrick Geddes’ prescribed system for planning cities and regional development – “Survey, analyze, plan” (Stephen, 2004) only emerged in the early twentieth century.

The kind of evaluation included in traditional city planning was part of a design process that still persists today, which designer-architect-planners apply to shape appliances, structures, buildings and cities. This process does not involve any formal evaluation of alternatives, but a relatively intuitive assessment of the merits and flaws of emerging design options, selections or modifications as they arise. Here evaluation is an integral, if informal, element of an abductive design process, which we are just beginning to understand (Coyne et al., 1990).

In spite of (perhaps well-founded) claims for the effectiveness of design-based planning to cope intuitively (rather than rationally-systematically) with the challenges of complexity, twentieth century planning ideas about best practice looked for something better. Progressive adoption of the prescribed (if idealized) rational planning process raised the need for more systematic evaluation methods to enable the kind of deliberate choice between designed alternatives that the rational planning

model demands. We shall see how the responses evolved to these needs for rational alternatives' evaluation and for the systematic assessment of public investments.

PUBLIC INVESTMENT AND BENEFIT-COST ANALYSIS

Systematic public investment analysis began to develop in the nineteenth century, in step with emerging political economics and the formulation of classic economic theory. The French economist Dupuis was probably the first to articulate the principles of Benefit-Cost Analysis (BCA) in 1844, as a way to ensure that the allocation of public investments would maximize total social benefit. BCA was intended to be the public sector equivalent of the private sector's "discipline of the market", which could evaluate prospective enterprises on the basis of their potential profit. Dupuis' proposed public investment analysis suggested "willingness to pay" as the counterpart for market prices and profits to measure beneficiaries' utility. In this simulation of market economics, the net social benefit of a public project is the same as classic Marshallian consumer surplus (Brown and Campbell, 2003: 171-173).

BCA was first applied in public investment analysis in evaluating large-scale public engineering projects (dams and other flood-control projects) funded under the US (1936) Flood Control Act – among the "New Deal" program's public works projects (Marglin, 1967: 17). From then on, public investment analysis methods (BCA expressing net social benefit in the benefit/cost ratio, and related approaches using net present value and internal rate of return as criteria) were widely and increasingly used to evaluate public projects and plans.

During its long period of refinement and application, BCA has been subject to a great deal of criticism. Many of the critiques are associated with BCA's roots in classic utilitarianism (see Chapters 2 and 4 below), which ignores the distributional aspects of social utility. BCA also shares with utilitarianism the premises of traditional liberalism, which at the same time makes the autonomous individual the ultimate repository of moral value and assumes the intrinsic identity and equality of all persons.

As a result, while it is quite a useful tool for appraising the total aggregated social value of a project (quantified in terms of money), BCA gives no answers to other equally important questions asked in project- or plan-evaluation. These include the question of who gets what and who pays, and the proposal's impacts in terms of distributional equity. The important modifications of BCA, such as the Planning Balance Sheet (see below) were developed primarily to address this shortcoming, and to add to BCA's index of aggregate social utility some indicators to enable assessment of distributional impacts.

Other objections focused on what is the obverse of BCA's major merit: its aggregation of all a project's costs and benefits (direct and indirect) in terms of market (or "shadow") prices and money. This gives BCA the huge advantage of offering decision makers a relatively scientific and presumably accurate quantified

estimate of the absolute social value of a public undertaking, on which they can base an informed decision whether to commit public resources to the project or not.

Critics, however, questioned the scientific validity and accuracy of BCA, proving that often the quantified estimates of benefits and costs are in fact based on tenuous assumptions. This is the case in BCA of complex strategic public plans and projects that involve significant indirect and intangible benefits and costs; for example, the intangible human cost of relocation in an urban clearance and revitalization project, the value of a life saved through the accident reduction potential of a new highway, or the civic benefit gained (in addition to the economic and quantifiable benefit of the individual beneficiary's lifetime income increment) by the educational attainments promoted by an early childhood reading program. Development programs aimed at poverty reduction are a case in point (Chapter 7 below).

One response to this problem was the modification of BCA to turn it into a different, though related, evaluation method: Cost-Effectiveness Analysis (CEA) (Levin and McEwan, 2000). CEA is only peripherally relevant to our discussion of evaluation in planning, which focuses on *a priori* evaluation of plans and project alternatives, because it is primarily a tool for *ex-post* program evaluation. Nevertheless, what it does is of interest, because its proponents found a way of overcoming some of the shortcomings of BCA, but only by giving up some of BCA's advantages.

In CEA the undertaking's costs are assessed, computed and monetarized just as in BCA, but benefits are expressed differently. CEA's measure of benefits is an effectiveness indicator, which is specifically developed to reflect the proposal's goal attainment. Creating a good effectiveness index is more of a craft than a science: CEA demands a quantitative index that at the same time clearly reflects the project's actual goal and draws on feasibly obtainable output or impact data. Thus, the effectiveness of an early breast cancer diagnosis program might be measured by years of remission per participant, or the success of a program to reduce toxic emissions by the percentage in reduction of risk of pollution-related disease or deaths.

Today CEA is well accepted as a valid method for quantified *a priori* comparison of alternative public investments in goal-related programs, for example, alternative programs in health such as, say, technology and training for early diagnosis of breast cancer vs. advanced technology and training for operative treatment. It can also substitute for BCA in giving a better *ex-post* evaluation of program effectiveness, for example, assessing the effectiveness of a job placement program by cost per job placement rather than trying to monetarize the aggregate social utility of the program's impacts.

But the usefulness of the last exercise depends on the evaluator's assigning an intuitive value to the index: creating a long-term job at a cost of a few thousand dollars is probably effective, but is a job costing \$20,000 still a success? Its failure to provide an absolute measure of social value, as BCA purports to do, limits the usefulness of CEA as an evaluation tool, as does the need to identify a single common goal for comparing programs. That is also why CEA cannot be the alternative to BCA that its critics were seeking, to evaluate complex public plans and projects. For

that, we will have to follow another path that leads through planning, not program evaluation.

EVALUATION CONTEXTS AND METHODS

This review began with evaluation in general, as intrinsic to all decision-making, and proceeded to discuss methods that developed to evaluate public undertakings. Its range up to this point has been wide, from *a priori* appraisal of any kind of public investment, to the *ex post facto* assessment of public program effectiveness. But our concern here is with evaluation in planning, implying a more focused approach. What does “in planning” mean? Two dimensions can define the relevant settings: time and object. The time dimension distinguishes between evaluation before, during, or after the undertaking. The other dimension defines the object: evaluation of what?

The timing of evaluation

In the time dimension we can distinguish between three kinds of evaluation, which also differ in their purpose. *A priori* evaluation means estimating the projected future impacts of a planned undertaking before its implementation. Often such evaluation involves comparing feasible alternatives in a relatively early stage of planning, to select the best one for detailing and elaboration. Evaluation before deciding to commit resources provides information on a project’s estimated value so as to enable better decisions. *A priori* evaluation is our prime concern in considering evaluation in planning.

Evaluation in progress¹ is done simultaneously with project or program implementation. It is intended to monitor implementation and assess conformance to predetermined goals, which may include quantified performance objectives and interim deadlines. There are a variety of tools for this kind of evaluation, which is primarily for the purpose of program or project management². As a management tool, in-progress evaluation is not relevant to our discussion of planning-evaluation.

Evaluation *ex post facto* involves measuring or assessing the impacts and effects of the subject undertaking – policy, plan, program or project – to evaluate its outcomes. This kind of evaluation usually begins upon completion or later, to allow time to observe relevant impacts. Evaluation here often includes systematic analysis of relations between inputs, outputs and impacts to explain the observed results. Many of the planning-evaluation methods discussed here are applied in *ex post* evaluation, with the difference that the information inputs are based on measured or

1 Sometimes the terms “*in itinere*” and “in process” are used.

2 For program administration such evaluation is part of the MBO and PBM (Management by Objectives and Performance Based Management) methods, and it is part of tools for complex project and construction management (e.g. PERT) (Mercer, 1991; PBM, 2004; Modell, 1996).

assessed reality, rather than the estimates or projections of an expected future that feed into a *a priori* evaluation.

The purpose of *ex post* evaluation is to learn from experience: its findings may be useful lessons for similar undertakings in the future. *Ex post* evaluation is a wide field of considerable intrinsic interest, but less relevant to us when applied (as it usually is) in program evaluation³. Therefore, we are focusing here on a *a priori* evaluation, to avoid extending our range beyond our capacity.

The only aspect of *ex post* evaluation that is exempt from this exclusion is plan-evaluation, i.e. the assessment of completed plans (see Faludi here). Plan evaluation is included for two reasons: one based on what it is, the other on what it is not. First, plan-evaluation is important for its potential to contribute knowledge. In planning theory this includes criteria for planning based on plan-assessment – what is a “good” plan or a “bad” plan? (Alexander and Faludi, 1989); for planning practice it involves assessing plan-performance (Mastop 1997) and substantive plan evaluation⁴. Second, plan-evaluation is not program evaluation, which is outside our domain. In fact, plan-evaluation is closely associated with planned development, the context of most plans and one of the objects of our concern.

The object of evaluation

What are the objects of evaluation that we have in mind when we refer to evaluation in planning? We can arrive at an intuitive delimitation by a process of elimination. Planning-evaluation in the sense used here does not include program evaluation, in the way that term is understood and applied in an extensive literature, that is, in progress and *ex post* evaluation of public (state or local government, or other public agencies and NGOs) programs and services.

Program evaluation is usually applied in public policy fields such as defence, health, education, housing, economic development and social welfare. It may be used to assess a specific program, activity or service (for example, the US Section 8 program of subsidized housing for the elderly) or as part of a policy analysis in a broader field (such as the British GIA program in the context of urban revitalization and housing policy). That is not included under evaluation in planning as discussed here.

Planning-evaluation as understood here, then, means a *a priori* evaluation applied in spatial planning. The objects of evaluation in planning include neighbourhood, city and regional plans, and strategic developmental and infrastructure projects at the multinational, national, regional and local scale. For our discussion, all these

3 See below; program evaluation has an extensive literature (Rossi, Freeman and Upsey, 1999).

4 Here substantive plan evaluation means assessing a plan’s quality and acceptability before adoption, in the course of technical-professional, administrative or judicial review; this is an important challenge on which more later – see “Conclusions”, Chapter 14 below.

plans can be subsumed under planned development, which differs from what we call strategic projects.

PLANNED DEVELOPMENT⁵

It is in the context of planned development that the evolution of planning-evaluation from BCA began. Planned development refers to the government-led spatial planning that emerged at the turn of the twentieth century, first in Europe and North America and soon spreading throughout the world. Planned development supplemented the previous site-based planning and urban design that determined the form of traditional cities and towns, with the growth of state intervention in the processes of urbanization and development.

Reacting to the perceived negative impacts of uncontrolled urban development through the course of the Industrial Revolution in developed countries, governments took powers to regulate and control piecemeal development. Under planned development government enforces standards to ensure a level of quality that would be absent otherwise, while settlements continue their market-led growth. Planned development, then, is a fusion of state planning and developer-initiated site and project plans responding to consumer demand.

From his background in Land Surveying and urban economics, Nathaniel Lichfield (1956) analyzed planned development practice in the UK. In discussing the role of planning-evaluation, Lichfield highlighted the contrast between private costs and benefits, which are accounted for in market transactions, and social ones that are not. Public planners and officials needed a way to assess these, for which BCA (because of its limitations mentioned above) was inadequate. This was the origin of the Planning Balance Sheet, Lichfield's modification of BCA for application to planned development (Lichfield, 1956: 263 ff., 1960), later elaborated and applied as Planning Balance Sheet Analysis (PBSA) (Lichfield, 1970, 1985).

In essence, PBSA is a form of impact analysis: it is a method for analyzing and displaying the repercussions of the subject plan or project, or what Lichfield called its "implications" (1956: 243). In PBSA these implications were envisaged (in economic terms) as project externalities, to be assessed in the process of project appraisal; later they became the central focus of attention in what Lichfield (1977, 1985) called Community Impact Evaluation (CIE).

The development of CIE also reflected two other influences. One was the emergence of another plan and project evaluation method: Environmental Impact Assessment (EIA) and its Environmental Impact Statement (EIS)⁶. The other was the spread of new ideas about planning, which downplayed the role of scientific analysis and prescribed a much more interactive style of planning (see Chapter 3 below). For plan-evaluation, these implied that evaluation methods, too, should be developed as interactive rather than analytic tools. In CIE, Lichfield envisaged

5 This section draws on Lichfield (2003).

6 More on EIA and EIS under Strategic Projects below.

evaluation not simply as a discrete stage in the planning process, but as an interactive process driving the whole planning effort, with special relevance for development control (Lichfield, 1996).

Lichfield's contributions to evaluation theory and practice were influential in Europe, but evaluation of planned development during the 1970s and 1980s in the US took a somewhat different course. In the US, too, BCA was the evaluation method of choice for assessing development projects, and there, too, planners and other consultants analyzing prospective project impacts were sensitive to BCA's limitations. But their concerns were very different from their British counterparts'. While Lichfield and his colleagues worried that BCA neglected distributional and social impacts, the Americans saw BCA's focus on projects' broader socio-economic impacts as a flaw.

Rapid suburbanization and urban expansion made US planners and local government officials aware of the potential costs of growth, in terms of financing services for new developments. While BCA could show a project's long-term effects on the socio-economic community, it was incapable of reflecting the direct fiscal impact on local government and other public service agencies⁷. Responding to this need, a modified form of BCA was developed: Fiscal Impact Analysis (Burchell and Listokin, 1982), which enjoyed great popularity and widespread application.

Strategic projects

Strategic projects are major public undertakings: large-scale land developments (urban extensions and new communities), regional development projects (settlement, economic development, environmental and flood control), major infrastructure nodes and facilities (harbors, airports, terminals, power stations) and networks: urban mass transit, highways, railways, energy and telecommunications. BCA was and continues to be the prevailing method for evaluating major strategic public projects, but competing evaluation methods have been developed to overcome BCA's acknowledged limitations.

Hill's (1968) "Goals Achievement Matrix" (GAM) was perhaps the first of what would become a family of related evaluation methods: Multi-Criteria Evaluation (MCE)⁸. The GAM owed a great deal to Lichfield's PBS which preceded it, but elaborated and quantified the PBS format of impact assessment to produce a numerical index that reflected the relative utility of the subject alternative. Another significant modification of PBSA was the introduction of goals or objectives into the evaluation matrix, to derive measurable criteria for assessing performance. This

7 However, this question had already been addressed previously in Britain, using a modified form of BCA called Financial Investment Appraisal (Lichfield, Kettle and Whitbread, 1973: 49-50).

8 This is the term used in the plan-evaluation literature, for the family of evaluation methods that is also called Multi-Objective Decision Making or Multiple Criteria Decision Analysis.

became a common feature of many MCE methods that were developed later, such as the Analytic Hierarchy Process (Saaty, 1980).

In the 1970s and 80s rising environmental awareness, which began in the US and spread throughout the world, stimulated laws and regulations requiring the inclusion of environmental impacts among planning and project decision considerations. A plan- and project-evaluation method was developed to meet these demands: Environmental Impact Assessment (EIA), which was usually designed to produce an Environmental Impact Statement (EIS) in a legally mandated format (Wood, 1995). PBSA was clearly an influential predecessor to these expansions of impact assessment, which included EIA and later Social Impact Assessment (Finsterbusch, 1985).

Meanwhile the array of MCE methods grew with the development and application of a variety of formal (usually computerized) plan-evaluation tools⁹. These differ in several ways. One is their relative level of computational complexity, from simple arithmetic to multiple mathematical functions. Another is the amount and kinds of data they demand; these are associated with their information sources (subjective assessment or empirical data) and degree of interactivity. Finally, they offer different approaches to prioritizing goals or criteria, ranging from paired comparison between possible objectives to tradeoff functions between conflicting goals¹⁰.

EVOLUTION OF EVALUATION METHODS

Much as in the life sciences, theories of evolution in planning-evaluation are related to systems of classification. Several classifications have been suggested, which we can apply to the evaluation methods reviewed here. Interestingly, all these converge with the rough time sequence of these methods' development and adoption, to offer a plausible model of the evolution of evaluation methods in planning.

Guba and Lincoln (1989) developed one classification; intended more for program evaluation, it is quite useful for planning evaluation as well. Their system divides evaluation approaches into four "generations" that represent progress from empirical positivism to post-positivist interaction (Khakee, 2003: 342-343). The first "generation", characterized by reliance on scientific measurement, is completely positivist. Of our evaluation methods, BCA, FIA and CEA clearly fall into this category.

The second "generation", trying to advance beyond simple positivism, combines empirical measurement with some assessment of goals-achievement; this applies to GAM and MCE methods. The third "generation", in reaction to the second, looked for objective and value-free ways of assessment; we can recognize this in the

9 For a review of some of these, see Janssen (1992).

10 Tradeoff functions between goals and criteria are a central feature of Keeney and Raiffa's (1976) MCE model, which evolved into another form of MCE: goal programming (Ignizio, 1985; Caballero et al, 1998). This is not included here because it is rather esoteric and more used in operations research than in planning-evaluation practice.

various methods of impact analysis: PBSA, EIA, and Social Impact Analysis. The fourth “generation” transcends raw empiricism into post-positive intersubjective interaction. CIA probably comes closest of the methods reviewed here to entering this “generation”, though some empirical dross still clings to its edges.

Another classification groups evaluation methods by their degree of aggregation, distinguishing between “highly aggregated”, “intermediate”, and “highly disaggregated” approaches (Söderbaum, 1998). Highly aggregated methods sum up their assessment of all the impacts in one quantitative measure of a single objective function, for example, a benefit-cost ratio or net present value to measure economic efficiency. Intermediate methods also use a single quantitative indicator to convey an alternative’s overall utility, but it is a composite reflecting different dimensions of value or achievement. Highly disaggregated methods are intrinsically multi-dimensional: they make no pretence of showing a project’s overall value. Rather, assessment and display of different impacts on affected parties or stakeholders is intended to stimulate interactive discourse and consensus (Khakee, 2003: 344-345).

The first class includes BCA and FIA, while CEA and all the MCE methods make up the second. PBSA is also “intermediate” in terms of its aggregation, combining investment analysis criteria with disaggregated impact analysis. The “highly disaggregated” approaches are the various forms of impact analysis, ranging from EIA to CIA.

Several other classifications draw their categories from planning theory, relating evaluation methods in planning to various planning models or paradigms. These include deliberative (rational) planning, interactive (communicative) planning, coordinative planning, and planning as frame-setting. The planning models or paradigms, in turn, and the evaluation methods associated with them, are linked to different kinds of rationality: instrumental, substantive and communicative rationality (Alexander, 1998a; Khakee, 2003: 346-347; see Chapter 3 below).

Rational planning is primarily associated with instrumental and substantive rationality, while interactive planning (or communicative practice) draws mainly on communicative rationality. But examination in more depth reveals that all planning models involve a varying mix of several kinds of rationality (Alexander, 2000). Consequently no classification provides a simple match between planning-evaluation methods, planning models, and kinds of rationality.

The developmental sequence of the planning evaluation methods reviewed above tempts us to infer an evolutionary parallel with progress from “lower” to “higher” forms of rationality. Thus, the earliest systematic planning evaluation approach to public investment analysis, BCA, is clearly associated with instrumental rationality, providing a clear quantitative index to measure aggregate performance to a single objective function. But this also holds for some later modifications of BCA: CEA and FIA, which only differ in their measured objectives.

Other planning evaluation methods that followed BCA were a more radical transformation, in reaction to BCA’s simple instrumental rationality. Lichfield’s PBSA recognized the complexity and multidimensionality of plan and project alternatives, which could not be summed in a single monetary value. This recognition

abandons instrumental rationality in an implied aspiration to substantive rationality: relating means to multiple values. In the GAM and following MCE methods the link with substantive rationality is explicit. Just as substantive rationality prescribes, these methods not only assess impacts in relation to multiple objectives, but include valuing or prioritizing the goals themselves.

CIA and other forms of Impact Analysis go a step further, introducing communicative rationality to the planning evaluation process. This is the meaning of their retreat from the attempt to aggregate the social value of a projected undertaking (as perceived by relevant decision makers or stakeholders) in a single numerical index. Rather, the producers of evaluation methods such as the CIA, EIA and SIA view them as a framework for recursive interaction between planner-analysts, stakeholders, and decision makers, to reach a consensus on the preferred course of action.

This evolutionary model, which associates the succession of evaluation methods with advances in rationality, seems a plausible account of how evaluation methods developed in planning. But in depth examination reveals its appealing image of unimpeded progress as an illusion, exposing the intrinsic fallacy of the metaphor of evolution applied to evaluation in planning.

The dimension missing from the above account of evaluation methods' development is the distinction between theory and practice. Making this distinction, we realize that advances in evaluation theory do not necessarily parallel developments in practice. Much of this review really described the succession of prescriptive models in evaluation theory. The review gave less attention to their diffusion as operational models, and said little about these methods' adoption and application in practice.

Partly, that is because there is little to say: there are no systematic surveys of evaluation applications¹¹. But a great deal of anecdotal evidence suggests the absence of any such parallel¹²; rather, there is an "emerging gap between evaluation research and practice" (Khakee, 2003: 340). Informed observation suggests that instrumental rationality is alive and well. BCA in some form or another is still the prevailing evaluation method for most strategic projects, from Trans-European TGV links in the Netherlands to World Bank funded high dams in Nepal. More advanced applications, using some of the Impact Analysis approaches (Chapters 11 and 12 below), MCE methods (Chapters 9 and 10 below) or CIA (Chapter 13 below) are rare.

The fallacy in applying the evolutionary metaphor to evaluation in planning is the absence of one of the essential aspects of evolution. In biological evolution, natural

11 That is, to the best of my knowledge. Such research would have considerable interest; it could be done by surveying practitioners on what methods they use, or by a "literature search" of publications to identify the applications that they report. The only evidence I can think of, which has an indirect bearing on the application of evaluation methods, are surveys of practitioners that explored the relationship between methods taught and those used in practice (Contant and Forkenbrook, 1986; Kaufmann and Simons, 1995; Ozawa and Selzer, 1999).

12 For Israel see Alexander (1998b), for Sweden see Khakee (2003).

selection results from the emergence of new species through adaptive mutation and the extinction of old ones that failed to cope with changed environments. In planning, we have witnessed the birth of new evaluation methods, which can perhaps be attributed to some intentional adaptation to perceived needs, but old ones do not become extinct. In planning practice, if not so much in prescriptive theory, all the evaluation methods that have ever “evolved” are still in use today, and those we think the most “primitive” are the ones enjoying the most widespread application.

This flaw in our “evolutionary” view of evaluation in planning raises one of the dilemmas confronting us today: how to bridge the apparent gap between evaluation theory and practice. We have seen how some have advanced evaluation theory and practice by adapting and transforming old evaluation methods into new ones. It remains to be seen whether we want to make some old methods extinct (if we can) and why we should want to. Perhaps the fundamental flaw in the evolutionary metaphor is its intrinsic attribute of progress: perhaps all planning evaluation methods are equal and each has its appropriate use and place.

This conclusion would imply a radically different approach to remedying the gap between evaluation theory and practice. It would encourage us to pay less attention to criticizing, modifying, and transforming the wealth of already sophisticated methods that we have, and more to developing a useful model of contingent application. Such a model might facilitate the development and institutionalization (which is already in progress) of complex multi-method evaluation systems, and would help practitioners find the best evaluation methods to apply for their specific purposes.

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