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Reframing incrementalism: A constructive response to the critics

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Abstract. The concept of incrementalism has been widely cited over the past three decades, yet it has not served as the basis for a cumulatively developing line of empirical and theoretical inquiry. As a result, the highly promising incrementalist framework has contributed surprisingly little to improving our understanding of how decision-making processes can better adapt to humans' cognitive limitations. One indicator of the lack of progress is that policy scholars have never made a sustained attempt to explain how practitioners can become *better* incrementalists. To see whether the concept's original formulation may be obscuring the way to further progress, we summarize and appraise four enduring criticisms of incrementalism: its alleged lack of goal orientation, conservatism, limited range of applicability, and negative stance toward analysis. While questioning the validity of the critics' claims, we nevertheless propose a way to reframe the incrementalist endeavor, with the intention of stimulating both its critics and defenders to get on with the task of learning more about how individuals, organizations, and societies can proceed relatively intelligently despite the fact that humans rarely have a good understanding of complex social problems and policy options.

The concept of incrementalism, developed by Charles E. Lindblom, has been one of the most widely cited ideas in the policy sciences. In the three decades since its inception, however, the concept has not served as the basis for a cumulatively developing line of empirical and theoretical research.[1] Curiously, it has failed to stimulate scholars either 'to articulate other strategies that avoid the impossible aspiration to synopsis [or] to give a more precise formulation to disjointed incrementalism as one such strategy' (Lindblom, 1979: 525). Nor is it clear that incrementalist ideas have been very helpful to practitioners.

The fame achieved by incrementalism suggests that the concept captures important elements in political and organizational life; but its deeper implications apparently have not been understood well enough for other scholars to actively work with it. We conjecture that the unfulfilled promise of incrementalism could be due in part to the way the concept was originally framed, and that it may be possible to refocus the concept to make it more generative for future research on policy making.

Toward that end, this paper briefly summarizes the main facets of the concept of incrementalism, reviews the primary criticisms advanced against the decision strategy, and appraises the validity of the criticisms.[2] We find that the criticisms of incrementalism by and large are invalid. But because the misunderstandings are widespread and enduring, and because the failure to *develop* this line of scholarship is so striking, we suggest that it makes sense to

reformulate the concept of incrementalism, rendering it more accessible to scholars as a framework for research, as well as easier for practitioners to employ as a guide in improving policy making. Several lines of recent scholarship illustrate how this might be accomplished.

1. The concept

In most significant decision situations humans do not have the time, cognitive capacity, resources, or theoretical understanding required for envisioning all conceivable options or for analyzing all the consequences of those options that do get considered. How, then, is intelligent action possible? Rather than proceeding haphazardly, doing whatever comes to mind and hoping for the best, persons/organizations/societies can proceed strategically in ways that economize on decision inputs that are in chronically short supply. This they can do by limiting analysis to 'any calculated or thoughtfully chosen set of strategems to simplify complex policy problems' (Lindblom, 1979: 518).

The concept of disjointed incrementalism is one of a (not yet carefully delineated) family of decision strategies that proceed via strategic analysis. It is a complex method of analysis 'marked by a mutually supporting set of simplifying and focusing strategems,' including:

a. Limitation of analysis to a few somewhat familiar policy alternatives, of which one possible form is simple incremental analysis: consideration of alternative policies differing only marginally from the status quo;
b. Intertwining of analysis of policy goals and other values with the empirical aspects of the problem – that is, no requirement that values be specified first with means subsequently found to promote them;
c. Greater analytical preoccupation with ills to be remedied than positive goals to be sought;
d. A sequence of trials, errors, and revised trials;
e. Analysis that explores only some, not all, of the important possible consequences of a considered alternative;
f. Fragmentation of analytical work to many partisan participants in policy making, each attending to their piece of the overall problem domain (Lindblom, 1979: 517).

This approach to analysis has the great virtue of being doable, in contrast with the kind of synoptic or comprehensive analysis to which some social scientists have aspired. But disjointed incremental analysis appears to sacrifice a great deal in its ruthless acknowledgement of limited human time and understanding, and this has troubled more than a few scholars.

Even more troubling has been *political* incrementalism, the practice of making and changing policies through relatively small steps. Budgetary incrementalism a la Wildavsky is the example par excellence (e.g., Davis, Dempster

and Wildavsky, 1974). Disjointed incrementalism as an analytic method and political incrementalism as a mode of action have blurred or even blended in many observers' minds, despite the fact that their logical connection is tenuous (compare Berry, 1990).

Simple incremental analysis, one variant of the first element in disjointed incrementalism (see #a above), clearly does lend itself to political incrementalism. But this is not true of any other element in analytic incrementalism. The political systems one generously thinks of as democratic do tend toward gradual political change – largely because conflicting partisans rarely are able to agree on bold policy moves, because business elites exercise their veto powers and their disproportionate influence to slow the pace of reform, and because ordinary people's thinking about political change has been impaired by socialization processes dominated by privileged elites (Lindblom, 1979; Lindblom and Woodhouse, 1993). But should any thoughtful person *endorse* the phenomenon of gradual change as an across-the-board prescription?

A possible ground for that would be the fact that small moves away from the status quo ordinarily can be understood better than large ones, and are less likely to result in large errors. But the probability and magnitude of errors of *co*mmission obviously need to be balanced in political judgments with the costs arising from errors of *o*mission. Those who perceive the status quo as intolerable may well want significant change despite the likelihood of making major mistakes.

Has the incrementalist tradition perhaps gone astray in becoming identified with a sluggish pace of improvement, in a world many perceive as needing significant political, economic, and social change? We doubt that the small-steps notion is necessary or helpful to the task of adapting analysis and action to human cognitive limits. Just as policy analysts would not claim to know how risk averse policy should be in coping with uncertainties such as greenhouse warming, in part because each additional degree of protection may come at the expense of meeting other important needs, neither have we any right or ability to tell partisans how large or small their steps should be. Indeed, it is not clear that anyone can really define for someone else what constitutes a 'large' or a 'small' step, since each partisan may see a policy move differently (Stone, 1988). So the concept of incrementalism needs to be rescued from its unfortunate association with 'small steps,' for there can be no general, inherent limitation on the desirable size of a policy move.

There is a second source of confusion among strategic analysis, small steps, and political interaction. The term 'incrementalism' – here connoting political incrementalism – has often been lumped together with the concept of partisan mutual adjustment. This is inappropriate, because partisan mutual adjustment – decentralized political interactions in which somewhat autonomous participants mutually affect one another – can draw on any type of analysis and can produce any type of policy outcome. Problem solving through partisan interaction does not require strategic analysis or any analysis: there may be inadequate time, inclination, or competence. And partisan mutual adjust-

ment to some degree *replaces* analysis, including disjointed incrementalism, while also being fully compatible with whatever analysis is available (Lindblom, 1965).

Partly because of these misunderstandings, a fair number of political science and policy scholars have come to consider incrementalism to be:

1. Insufficiently proactive, goal oriented, and ambitious;
2. Excessively conservative, because increments are small and bargaining favors organized elites;
3. Useful in too limited a range of decision contexts; and
4. Too hostile to analysis.

Examining representative examples of these standard criticisms suggests that incrementalism has not been understood very well.

2. Goal orientation

Perhaps the most common criticism of incrementalism concerns its perceived lack of goal orientation. One recent critic colorfully suggests that

> Lindblom is interested in how the Lost Patrol in Crock's desert selects the possible routes that it will consider taking, compares their prospects and pitfalls, and bargains among themselves over which one to try. I am interested in how the Lost Patrol's captain leads it back to Crock's fortress (Behn, 1988: 649).

Forester (1984: 23) claims that incrementalism 'would have us cross and recross intersections without knowing where we were going.' Mintzberg and Jorgensen worry about producing a fragmented series of outcomes so unrelated to each other that 'it no longer makes sense to talk about policies at all' (1987: 218). Etzioni (1967: 387) finds that incremental steps 'may be circular – leading back to where they started, or dispersed – leading in many directions at once but leading nowhere.' Dryzek (1987: 435) argues that 'adversarial stalemate, paralysis, conspiratorial externalization of the costs of a particular compromise, and drift are as likely as problem amelioration.' Pava complains that the process is one in which goals are 'left unclear' and themes are 'ill-defined' (Pava, 1986: 622–623). And for Stopford and Baden-Fuller (1990) incrementalism is incompatible with clear definition of goals in a plan of action.

A variant of this theme holds that incrementalism is inherently reactive. Fredrickson (1983: 568) and Underal (1984: 66) see incrementalism as an essentially remedial process, with moves merely being made away from the status quo, rather than toward positive goals, as they would prefer. Grandori (1984: 199) says that 'incrementalism is compatible with a strictly a pos-

teriori and passive learning process.' And Manzer suggests that incrementalism

> ...might also be described as reactive problem-solving. Decision-makers wait for the pressure of events to establish their priorities. Then they fight fires or prescribe cures, dealing with pressing issues and political crises as the need arises (Manzer, 1984: 583).

The perceived passivity and goallessness of incrementalism are linked by some critics back to Lindblom's rejection of synoptic rationality. Although efforts to be comprehensive will fall short, nearly everyone acknowledges, such attempts have 'at least the advantage of stimulating administrators to get a little outside their regular routine,' while Lindblom's model justifies a policy of 'no effort' (Dror, 1964: 155). Arrow concurs:

> A synoptic ideal would at least force the attention of decision-makers on as many relevant factors as social scientists, even with our present highly imperfect knowledge, can see as relevant. ...[T]he unattainable goal of the well-defined complete decision structure provides a better spur for clear and difficult thinking by the social scientist than does a complacent acceptance of our imperfections (Arrow, 1964: 587–588).

Appraisal

More than a few scholars, then, are distinctly uncomfortable with what they see as the passivity of incrementalism. But other scholars do not agree that incrementalism interferes with active pursuit of goals. Weick, for example, argues that a series of small, incremental wins can 'move in the same general direction (toward a goal) or all move away from some deplorable condition' (Weick, 1984: 43). Likewise, for Quinn, 'the total pattern of actions, though incremental, does not remain piecemeal in a well-managed organization' (Quinn, 1982: 623–624). 'In the hands of skillful executives, ... incrementalism can be a purposeful, powerful management technique for integrating analytical, behavioral, political and timing aspects of strategy formulation' (Quinn, 1982: 613–614).

Nor did Lindblom criticize goals; he merely argued that they always are intertwined with and embodied in the specific policy options being compared: 'One simultaneously chooses a policy to attain certain objectives and chooses the objectives themselves' (Lindblom, 1959: 82). In fact, 'Muddling Through' explicitly made clear that the relevant goals could be long-term ones (1959: 86). Incremental analysis helps harried policy makers achieve *their* goals, by providing means of coping with information overload and pressured schedules.

Individuals in politics obviously have goals, as do interest groups, federal agencies, and others. They do not need, or want, a decision strategy imposing

its own goals. All serious political participants use facts, ideas, theories – analysis – of some kind, with many of them conducting or commissioning formal analysis. But none ever obtains understanding of complex policy problems sufficient to obviate the need for coping strategies such as the method of successive limited comparisons. In political bargaining, moreover, partisans operating from one set of goals and supporting analyses usually must make common cause with others who have somewhat diffferent goals and analyses.

The scholars reviewed here all know this. What, then, accounts for the expenditure of considerable energy on a non-issue? We suspect that the confusion arises partly from the failure of incrementalist thought to set forth a strategy for making fairer, more intelligent, or otherwise *better* social choices. Without some such framework, many scholars have worried that incrementalism could be interpreted as holding that any old set of goals or policies is just as good as any other. While a strange notion – do you know anyone who holds such an outrageous belief? – it may be constructive to interpret the criticisms as calling for future scholarship to identify a core set of conditions that contribute to intelligent social choice in a way that a great many policy scholars and practitioners could accept. We return to this issue in a later section.

3. Conservatism

A second, closely related criticism is that incrementalism is a conservative process, that it will not work well for those who want to change society for the better. This perception is based partly on the assumption that steps typically will be too small to yield the significant innovations necessary to solve fundamental problems. Thus, Etzioni (1967: 387) fears that 'incrementalism would tend to neglect *basic* societal innovations' (emphasis in original). It would actually be dangerous for social scientists to embrace incrementalism, according to Dror, because this would limit their ability to serve as a source of social innovation. Allegedly, policy makers already are 'well aware of incremental alternatives and [are] looking to the social scientists for *new* ideas' (Dror, 1964: 155, emphasis added).

Incrementalism also is adjudged too conservative because it is perceived to favor interests represented by organized elites, who have a natural advantage in the political bargaining process. Because the poor and disorganized do not have the time and resources to compete in the policy-making milieu, Forester (1984, 28) observes, the rich and well-organized will dominate incremental decision making. Lustick tries to show deductively that disjointed incrementalism becomes less useful as organizational power becomes more unevenly distributed, with weaker actors unable to protect or promote values the stronger actors choose to discount (Lustick, 1980: 350). For example, NASA produced an uneconomical Space Shuttle in part because the incremental process took 'insufficient account of crucial factors that are not powerfully

represented in the bargaining process, e.g., the future' (Logsdon, 1986: 105).

Even some advocates of incrementalism, notably Quinn (1982) and Johnson (1988), present it as a tool with which organizations' *executives* can more effectively achieve their ends. And Diver (1982: 99) observes that 'we would expect error-correction to favor interests championed by enforcers and regulated firms and to under-value interests of unorganized beneficiaries of government programs.'

Appraisal

Of course the world needs more than just minor change. But exactly what bearing does this have on the utility of incrementalism? Is the decision strategy inherently conservative, inherently favoring organized elites? Braybrooke and Lindblom argued that incrementalism in no way restricts policy directions, that 'it could equally well be used to travel toward complete laissez faire or toward pervasive governmental regulation of the economy.' Moreover, 'the strategy specifies nothing about the speed with which change is to be carried on' (1963: 109). A series of small steps obviously can lead to significant change if there are enough of them coming quickly enough.

It is true that Lindblom pointed out some of the pitfalls of large-scale change, noting that revolution is 'always a treacherous method of social change that as often disappoints its movers as gratifies them.' Even non-revolutionary attempts at large change will yield many errors that will have to be dealt with simultaneously (Lindblom, 1979: 521). And bold action in most Western nations is politically unlikely except when catastrophe strikes (Lindblom, 1988). But such observations are incontrovertible, and would have to be taken into account by any decision strategy.

The bottom line is that 'Incremental policy making is weak, often inefficacious, inadequate to the problem at hand; and the control over it often falls into the wrong hands. It is also usually the best that can be done' (Lindblom, 1988: 11). The ceaseless change prescribed by incremental analysis has not been shown less likely to challenge a conservative power structure over the long run than are attempts at synopticism (Braybrooke and Lindblom, 1963: 106–110).

What about the more specific claim that incrementalism favors organized elites? Certainly each interest group, committee, legislator, and agency neglects important values outside its range of concern. For incremental analysis to work as well as it theoretically could, every important interest would need a watchdog in government to protect its constituents 'first, by redressing damages done by other agencies; and, second, by anticipating and heading off injury before it occurs' (Lindblom, 1959: 85). We know that few, if any, contemporary political systems closely approximate this ideal.

Political structures in market-oriented, semi-democratic societies give substantial veto powers to those opposed to social change (especially the business community). Moreover, both political elites and citizens have been indoctrinated to believe that the power given business interests is necessary to

preserve our way of life (Lindblom, 1977, 1990). Hence, there is something of a rigged competition in which business and other well-organized interests win disproportionately, a serious deficiency in contemporary political process that Lindblom along with many other scholars in the 1950s and 1960s underestimated or underreported. But it is not clear what bearing this has on disjointed incrementalism, for these would be obstacles to marshalling political resources behind *any* change-oriented strategy. Hence, it is the socio-political power structure that favors organized elites, not incrementalism or any other decision strategy. So the criticism regarding organized elites is simply off the mark.

Nevertheless, it may be reasonable to construe the above criticisms as calling for incrementalist thought to make a specific place for alternative forms of analysis that can counteract habits of thinking 'small, timidly, conservatively about social change.' We need to supplement the method of successive limited comparisons 'by broad-ranging, often highly speculative, and sometimes utopian thinking ... near and far in time' (Lindblom, 1979: 522). The early writings on incrementalism also did not sufficiently acknowledge the many serious shortcomings of contemporary political-economic systems. While these and other shortcomings and ambiguities in the original statements were cleared up in 'Still Muddling,' there is considerable work yet to be done to flesh out the relationships among (a) decision strategies such as incrementalism, (b) institutional designs promoting the use of such strategies, (c) social and political inequalities interfering with error correction, and (d) other elements of strategic problem solving. We return to this issue in the concluding section.

4. Range of applicability

A very different set of criticisms pertains not to the substantive outcomes resulting from incremental analysis and politics, but to the adequacy of incrementalism as an analytic method.

Part of this criticism holds that incrementalism is appropriate in too narrow a range of decision situations. 'Implicit in the incremental model is the assumption that decision makers confront a relatively stable environment,' but a 'crisis environment breaks down the forces which support incremental decision making' (Nice, 1987: 145, 156). This is true in part because

> Under crisis conditions, the estimated costs of failing to deal with the situation are high. Policy makers are likely, therefore, to feel that higher decision costs are worth paying. More policy options can be considered. At the same time, because the crisis is perceived to entail great costs if it is not resolved, policy makers are more willing to bear the uncertainty which major policy shifts bring (p. 155).

Lustick attempts to build a logical case against using incrementalism in a crisis, '[w]here the survival of the organization is immediately at stake, and available resources are perceived as desperately short.' His reasoning is that disjointed incremental muddling requires 'the deployment of substantial resources in a manner which will not be directly and immediately productive. In extremis, only a comprehensively planned and explicitly coordinated commitment of all available resources (however likely to fail) holds out the logical possibility of success.' Additionally, costly problems that critically stress organizational resources should not be approached incrementally because incrementalism's trial and error requires multiple tests of policy when only a few tests (or only one) can be afforded (Lustick, 1980: 348–349).

Even instabilities well short of the crisis stage are said to disrupt fatally the efficiency of incrementalism. Ahrari (1987: 73) places incrementalism among decision-making paradigms 'concerned with policies under "normal" circumstances, that is, when the necessity for the policy did not arise from an exigency, either man-made or natural.' Gifford suggests that 'the "muddling through" model of decisionmaking is inappropriate for situations in which an agency cannot obtain information needed to decide future cases from its experience with past cases.' This may occur either 'because of the variety of factual patterns in the cases coming before an agency for decision, or because of significant change in an industry' (Gifford, 1983: 120). Moreover, important problems in technological societies often 'are tied up with high speed changes in levels of aspirations, the nature of issues, and the available means of action, and require therefore a policy making method quite different from "muddling through"' (Dror, 1969: 154).

Appraisal

Is incrementalism really worse than the realistic alternatives as an analytic strategy in crises and other unstable decision contexts? None of the critics makes a good case for believing this. Even the empirical claims look questionable, since other studies show that 'top executives often deal with precipitating events in an incremental fashion' because 'logic dictates that critical decisions should be made as late as possible consistent with the information; this usually means incrementally' (Quinn, 1982: 614). Hayes finds that even dramatic, rapidly escalating issues often fail to yield non-incremental policy outcomes, and it seems that 'incremental outcomes may be likely under a wider range of conditions than previously thought' (Hayes, 1987: 463).

It is obvious that there are situations such as wars, revolutions, and other crises where understanding is unusually weak and large change may be desirable – or at least unavoidable. Disjointed incrementalism surely is not as well adapted for such situations as it is for those where policy problems and options are more familiar, as Braybrooke and Lindblom pointed out three decades ago (1963: 78–79). But is it not equally obvious that *no* strategy is going to work as well when huge risks are coupled with enormously complex and rapidly changing circumstances? Certainly none of the critics

proposes *any* systematic new strategy for crisis decision making; nor has such a general strategy emerged from those subfields of the social sciences that focus on foreign policy making, social movements, conflict processes, and the like.

Might there actually be *more* need for strategic use of analysis in crisis situations than in ordinary policy making? Specifically,

1. Analysis surely must be limited to a manageable number of alternatives (Cuban missile crisis: blockade versus air strike).
2. Value conflicts and tradeoffs remain as difficult as ever, and can only be understood via comparison of policy alternatives.
3. Analytical preoccupation is as likely as ever to remain on remedying ills (get 'Hussein' out of Kuwait versus establish a peaceful Mideast).
4. The trial-and-error sequence is likely to be compressed in time and errors may carry higher than usual costs, but intelligent policy makers surely will try to learn from experience even in crisis.
5. Analysis obviously will have to ignore many of the important possible consequences of policy alternatives (will an attack on Iraqi forces induce them to set fire to the oil wells? If so, will it precipitate global eco-catastrophe?).
6. Analytical work still needs to be fragmented to partisans sufficiently diverse to catch and counteract each other's egregious errors (compare George [1980] on multiple advocacy).

Neither in ordinary nor in turbulent policy-making conditions do these tactics guarantee success; but together they do constitute a coping strategy offering improved prospects of success compared with failing to employ the strategy.

5. Stance toward analysis

A variety of critics argue that incrementalism calls for too little analysis, or for the wrong kind. Dryzek offers a humorous comparison between incrementalists and a species known for its suicidal tendencies: '[A]s any lemming will tell you, if you are standing on the edge of a cliff, then it only requires an incremental step to plunge into the abyss. Political scientists turn out to be rather ordinary lemmings' (Dryzek, 1983: 2). Goodin and Waldner likewise worry that threshold effects can mislead incrementalists by showing up suddenly: 'Incremental changes in inputs may produce incremental changes in outputs until the threshold is crossed, at which point the change in outputs is markedly non-incremental' (Goodin and Waldner, 1979: 7). And Lustick offers hypothetical instances where 'incremental actions in an unimportant sphere may have significant impact on matters of vital importance' (Lustick, 1980: 345). Conversely, decision makers may prematurely halt a potentially successful policy because they are not aware that success will become

apparent only after a certain level and duration of effort (Goodin and Waldner, 1979: 5).

Another category said to require different analysis than incrementalism provides is sleeper effects, which 'deprive the incremental decision maker of prompt negative feedback' (Lustick, 1980: 348). In the worst case, 'If the goods of a policy come immediately but there is a hundred year time lag between a program and its ill effects, incrementalists$_1$ will be expanding a program every year for a century before feeling the unwelcome consequences of the first year's intervention.' This would make a mockery of incremental adjustment, because even if policy makers 'halt the program immediately they will reap the increasingly grievous fruits of a hundred years of misguided intervention' (Goodin and Waldner, 1979: 7).

Many other scholars seek some kind of analysis they perceive as different from what incrementalism offers, including most of the critics discussed in the earlier section on goallessness.

Appraisal

The claims that incremental analysis does not do well at catching threshold and sleeper effects surely are correct. Important possible consequences of policies definitely are ignored in disjointed incrementalism, for the simple reason that it is not humanly possible to do otherwise for complex problems. The interesting question is whether sleeper effects and other unanticipated consequences are more likely to be caught by the strategic analysis and serial action that is feasible, or by doomed attempts at comprehensiveness. This potentially is an empirical issue, but neither incrementalists nor their critics have made much in the way of sustained studies of actual cases. Dryzek, Arrow, Lustick, and the other critics rely almost exclusively on *hypothetical* cases, not actual ones. And they ask whether, hypothetically, we would like to know in advance about thresholds and so forth. Of course, who wouldn't? But considering how often policy analysis misses fairly obvious points – for example, that there are different kinds of asbestos and not all may be dangerous enough to warrant removal at high cost from public schools – what are the odds of being able reliably to spot long-lagged, esoteric thresholds, sleeper effects, and the like?

Even if their specific criticisms are off the mark, have the anti-incrementalists perhaps spotted a generic weakness in disjointed incrementalism? Was there some hostility to analysis embedded in Lindblom's original formulation that ought to be corrected? It certainly is true that Lindblom challenged the widely accepted notion that public policy problems can best be solved by attempting to fully understand them: political *interaction*, not analysis, is the essence of the intelligence of democracy. Understanding rarely can be an up-front substitute for politics and for experience; instead, understanding typically evolves along with political judgments, epiphenomenal outcomes, and trial-and-error implementation.

The anti-incrementalists could accept this yet still want *more* analysis than

they perceive incrementalism to seek, believing it will lead to greater (even if still incomplete) understanding. No one has a very good way of figuring out in advance what sort of research is going to yield what sort of insights for political action, of course, and it is apparent that diminishing returns can set in. Following the Coleman Report, for example, several decades of research on schooling have produced remarkably little agreement among scholars regarding the relationship between expenditures on education and children's educational attainment (compare Hanushek, 1972 with Hanushek and Taylor, 1990). But leaving aside doubts about the marginal returns of further policy research and analysis, is there anything in incrementalism suggesting that policy makers should refrain from commissioning or using research they expect to be helpful to them, within the available time and funding? Of course there is not: Incrementalists welcome such facts, theories and other helpful inputs as will promote sensible choice; they merely point out – as the critics must agree – that analysis always will be constrained by limits on time, money, and human cognition, and therefore analysis should be targetted strategically.

There actually is a *pro-analysis* side of incrementalism, partly obscured by the peculiar historical roots of the concept. In trying to counteract the excessive claims being made for analysis during the 1950s and 1960s by operations researchers and other analysis gurus, Lindblom says that he 'failed to communicate to readers' his full sense of 'how bad ... policy analysis and policy making are' – and, consequently, how important it is to bring greater intelligence into the process. Lack of understanding of course 'is a hindrance, and a tragic one. And that is why we need analytical strategies like disjointed incrementalism to make the most of our limited abilities to understand' (1979: 519).

Noting the obvious fact that 'sometimes a great deal of permanent damage can be done before a corrective next step can be taken,' Braybrooke and Lindblom argue that, nevertheless, 'Unanticipated adverse consequences can often be better guarded against by waiting for their emergence than by futile attempts to anticipate every contingency as required in synoptic problem solving' (1963: 126). This is an unpleasant fact of life, indeed a tragic one. But what the critics might have in mind to remedy it is something of a mystery. For we all know the track record of even the most highly professional economic and other forecasting endeavors, with far greater time and resources applied than is conceivable for most policy making (Ascher, 1978; Drucker, 1974). Given humans' inability accurately to predict the future, the critics' belief that a bit more formal analysis conducted a bit earlier will eliminate a significant fraction of previously unanticipated adverse consequences simply is not credible.

Again, however, we are reluctant to dismiss the criticisms, for there is something deeply troubling to more than a few scholars about what they understand to be the incrementalist way of incorporating analysis into political action. In the next section, we attempt to find a path leading beyond the impasse.

6. Whither incrementalism?

In sum, incremental *analysis* is not conservative or goalless; nor is its applicability limited to a narrow range of decision contexts; nor is it less friendly to theory and evidence than any other realistic strategy of decision. We suspect the misunderstandings arise partly because incrementalism runs against the grain of fundamental precepts in Western culture. With its emphasis on human limitations and the consequent desirability of strategies for coping with uncertainty, incrementalism poses a challenge to the mastery-via-understanding tradition of Western civilization. Especially among students of policy making there remains an excessive faith in the possibility of conducting politics largely via systematic professional analysis, and Lindblom's debunking of this notion may have seemed to challenge noble aspirations of using government for social justice, environmental protection, and other progressive purposes.

A related misunderstanding is that some critics perceive an inextricable tie between incrementalism and the theory of 'thin' or pluralist democracy (Barber, 1984). We find no such bond. The extent of citizen participation and the distribution of political power certainly are crucial in determining what problems get addressed, what options are considered, and how outcomes are shaped; but even in the most egalitarian and most deliberative democracy conceivable, political participants would face all of the problems of proceeding in the face of complexity discussed in 'Muddling Through.' Indeed, less impaired inquiry together with enhanced citizen participation and more equal sharing of influence might well increase the complexity of political life. Hence, deliberative democracies would need strategic approaches for coping with uncertainty and disagreement at least as much as do contemporary political systems.[3]

What, then, is to be done? One possibility is simply to say that the critics are wrong and let it go at that. But the fact is that some very good scholars have been put off by one or more aspects of the concept as they understand it, and the original formulation of incrementalist ideas (particularly the discussion of small steps) probably contributed to the misunderstanding. As important, even the advocates are making little progress developing the incrementalist tradition. Given the enormous attention paid to these ideas – 'The Science of "Muddling Through"' is one of the most highly cited articles in the *Social Science Citation Index* – it seems to us worth trying to reframe the concept so as to enlist the critics and reinvigorate the defenders.

A possible tack in this direction is to go back to the spirit rather than the letter of Lindblom's work, getting away from unproductive debates over secondary issues like small steps and inviting a reopening of the underlying inquiry: How do individuals, organizations, and societies cope with limits on human understanding, and how can they do it better so as to improve policy making? If condemned by lack of time, resources, and cognitive power to proceeding with inadequate understanding, how can we become *better* incremen-

talists or better strategic thinkers and actors more generally? What strategies, institutions, and processes would be helpful in promoting the improved use of strategic analysis and action throughout social life?[4]

This large domain can be explored in part on the basis of the critics' four concerns regarding conservatism, elites, range of applicability, and the appropriate type and extent of analysis. For example, how can political participants with reform agendas proceed sensibly in the face of uncertainty? What procedural arrangements and analytic approaches can be used to promote learning from experience in crises and other turbulent decision-making contexts? What combinations of analysis and strategy are available to minimize the destructiveness of thresholds, sleeper effects, and other errors that could prove unacceptably costly? Several strands of neo-incrementalist research have begun studying these and other issues, combining new empirical materials with new conceptual developments.

Neo-incrementalist research

Hayes (1992) has attempted to rethink and extend incrementalism, posing questions such as the following: (1) What institutional and other forces cause policy making so often to proceed timidly? (2) Under what circumstances have larger-than-typical policy moves been attempted? (3) Are there specifiable circumstances under which radical policy steps may be advisable? While the likelihood of successful large-scale change is not nearly as high as policy crusaders may claim, and rational-comprehensive analysis fails for all the reasons Lindblom originally adduced, Hayes identifies circumstances in which bold policy initiatives are needed – and stand a reasonable chance of improving on the status quo better than can be achieved through a series of minor reforms. In particular, he argues that *agreement* on goals and 'policy facts' by a mature policy network can satisfactorily substitute for *analysis* of bold moves.

A number of other studies can be construed as contributing to this line of analysis. Income tax policy (Witte, 1985), case-by-case evolution of jurisprudence (Shapiro, 1965), governmental deregulation of industries (Jones and Thompson, 1984), and school desegregation (Hochschild, 1984) are among the cases raising the question: under what circumstances are bold strokes through Gordian knots required if intricate systems are to be significantly improved? Schulman (1975, 1980) observes that implementation sometimes may require large, long-term commitments with rapid scaleups that are not incremental; his example is the Apollo program. McCurdy (1990) concludes that the space station program has experienced major difficulties because it evolved through political bargaining. The troubled U.S. fusion R&D program displays similar tendencies (Kay, 1991–92). These scholars suggest that successful development of complex technological endeavors requires a clear political consensus on goals early on, so that program managers can make the necessary up-front commitments.

These studies respond to some of the critics' concerns by bringing a goal-oriented perspective to their analysis, and by entertaining the possibility that some combination of urgent need and practical understanding may be sufficient to justify bold action rather than small steps. They leave the policy sciences with a generic question: Can we identify types of policies requiring quick, once-and-for-all moves for a reasonable prospect of success?

A very different line of neo-incrementalist research attends to the problem of long-lagged feedback such as that involved in sleeper effects. British analyst of technology policy David Collingridge (1992) has examined large-scale endeavors such as civilian nuclear power and World Bank irrigation schemes using a framework explicitly derived from incrementalism, and building on it. He asks whether these projects are sufficiently flexible to adapt adroitly as mistakes are revealed, goals change, and new interests seek to modify the projects. Collingridge finds that large-scale technological endeavors ordinarily are relatively inflexible and cannot readily adapt; and thus they are prone to expensive errors. The sources of inflexibility can be specified: large-scale projects entail high capital costs, with a substantial fraction of the expense incurred before experience can be acquired regarding how well the project's aims are being achieved; and these projects may take a decade or more to complete. So even if policy makers attempt to adjust after receipt of negative feedback, they will be unable to avoid high-cost errors. Collingridge argues that policy options can be compared on the basis of how long the 'lead time' will be before earliest possible receipt of negative feedback, and compared as well on the extent to which payment schedules correspond with revealed performance (also see Pressman and Wildavsky, 1973). Again, this neo-incrementalist approach clearly is goal-oriented, and would pretty clearly tend to produce policy guidance contrary to the interests of some established elites and their organizations.

A third line of research asks how policy making should proceed where understanding is grossly incomplete and errors are inevitable, yet errors are potentially catastrophic. Morone and Woodhouse find a number of (largely implicit) strategies and tactics, imperfectly applied in various technology policy arenas, that help cope with inevitable shortfalls in knowledge. One of these is to take initial precautions before undertaking actions that may pose egregious risks: thus, since 1976, before manufacture of a new chemical can begin in the U.S., it must undergo premanufacture screening and be judged acceptable by the Environmental Protection Agency (Morone and Woodhouse, 1986). Nuclear reactors in western nations must have containment buildings far stronger than the one at Chernobyl (Morone and Woodhouse, 1989). And despite the fact that many researchers believed early biotechnology experiments would be safe, those conducting recombinant DNA studies agreed to the precaution of using only deliberately enfeebled bacteria unable to live outside special laboratory conditions (Morone and Woodhouse, 1986).

Neither initial precautions nor other strategies for coping with uncertainty

and risk will eliminate the need for serial learning from experience. Nor do the strategies guarantee that learning will be fast enough or successful enough: Initial precautions may prove inadequate, and learning may still be too slow despite efforts to speed it up. But it should not be difficult to choose between an ordinary form of trial-and-error characterized by slow learning and high-cost errors, and 'intelligent' or 'sophisticated' trial-and-error that protects against the worst consequences and speeds up learning (Woodhouse, 1988; Woodhouse and Collingridge, 1993). The extent to which various coping strategies feasibly can be applied in various policy contexts is one of many issues inviting further inquiry.

Conclusion

The misunderstandings and criticisms accumulated over the past three decades have partially obscured the original aims Lindblom had for the concept of incrementalism. Since, we believe, these aims remain absolutely central to improving the policy sciences as well as to improving political life, we have tried to clear away some of the accumulated underbrush so as to allow better access to the basic questions for which incrementalist ideas constituted one partial and incomplete answer. In particular, many scholars have not yet taken account of the deep and troubling questions raised for political organization and action by the sharp constraints on human capacities for understanding policy problems and options. Much therefore remains to be done along the lines charted in a provisional way by Lindblom.

In principle, we believe that the concept of incrementalism can be rescued from its unfortunate association with 'small steps.' If, in practice, the term's conservative connotation in policy scholars' minds is too strong, then perhaps the concept will need to be renamed or replaced. In either case, it is time to get on with the tasks sketched in a preliminary way by Lindblom three decades ago: How do political participants and policy professionals cope with uncertainty? What strategies of decision would allow them to do it better? What institutional arrangements actually and potentially are available to promote the skilled and fair use of strategic analysis and action, including but by no means limited to disjointed incrementalism? A substantial chunk of social science arguably can be rearranged around these questions and other correlative ones waiting to be articulated.

Notes

1. For an interpretation of this odd state of affairs, see Woodhouse and Collingridge (1993).
2. For earlier appraisals with goals quite different from ours, see Lindblom (1979); Premfors (1981); Spread (1985); and Hayes (1992).
3. An implication is that strategic decision making, including incremental analysis, also is

applicable in authoritarian regimes. This is no more reason to turn aside from strategic approaches to decision making than would be the fact that authoritarians and democrats both need flexible mechanisms for setting monetary policy.

4. See Starling (1991) for a somewhat different interpretation of directions to be taken regarding strategic policy making.

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