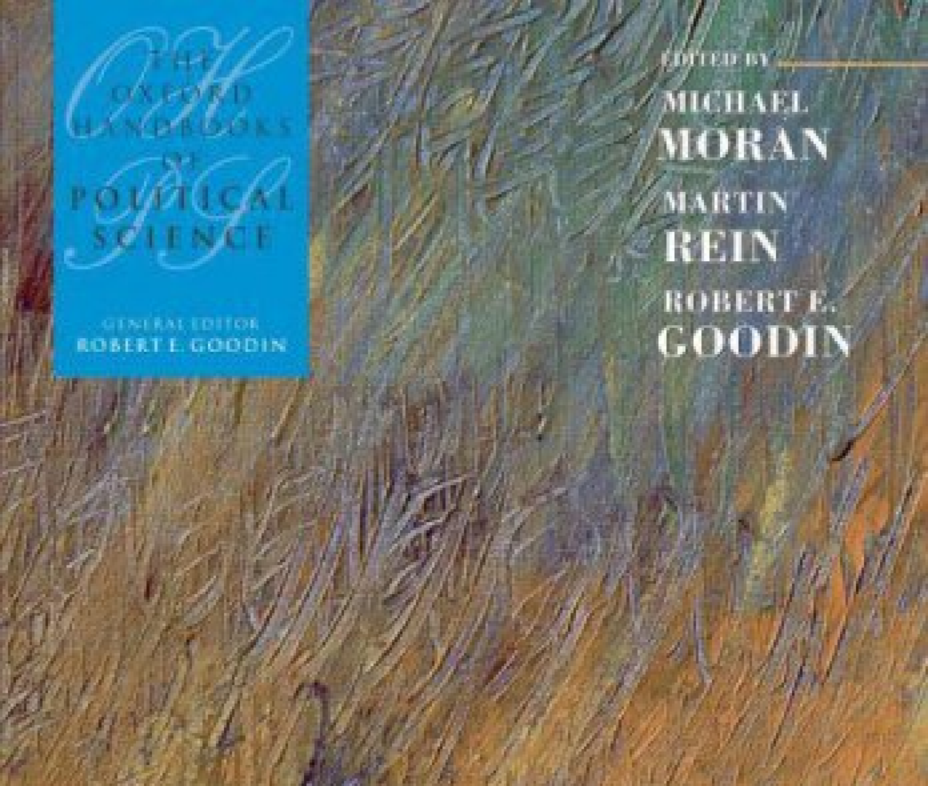

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gram designs, energizing social movements, building community consensus, and diffusing innovations. The central structural fact about a momentum process is that every step in the process has a dual aspect. On the one hand, it is a movement in the direction of a goal; more indirectly, it creates a stimulus or an opportunity that encourages others to move towards the goal as well. In the simplest case, a bandwagon, every new supporter is an increment towards getting enough support to win according to the rules of the game; but it is also an addition to the signal that observers on the sidelines should regard this as the winning side.

A more complicated dynamic involves not merely signaling but interacting as well. Each new recruit to the cause becomes an asset in the emerging advocacy coalition as well, a potential proselytizer. Thus, in a community consensus-building process, each new recruit is both a confidence-building signal on a broadcast channel, so to speak, and a persuader and reinforcer to those with whom she communicates in a network of narrowcast channels. To take another example, implementing a complex program design, or building an interagency collaborative, is even more complicated. Each new institutional actor that begins to play its required role becomes (1) a bandwagon signal, (2) a persuader and reinforcer for others who are more reluctant, and (3) another node in a communications network that creates more capacity both to mobilize and to work through further implementation details. The constructive role of momentum building and of emergent new communications capacity was underappreciated in the pioneering work on implementation by Pressman and Wildavsky (Pressman and Wildavsky 1979), who assumed that all institutional actors made decisions independently of one another, whereas in most cases positive decisions by some increase the likelihood of positive decisions by others.

Momentum dynamics are at the heart of the very complex phenomenon of revolutions. Susanne Lohmann has postulated a model of "informational cascades" to illuminate mass protest activities leading to regime collapse and applied it persuasively to East Germany in the period 1989–91. The model incorporates: (1) "costly political action" by individuals that expresses dissatisfaction with the regime; (2) the public receiving "informational cues" from the size of the protest movement over time; and (3) loss of support and regime collapse "if the protest activities reveal it to be malign" (Lohmann 1994, 49).

4.2 Selective Retention

From biological evolution, selective retention is familiar as a competitive process. This model obviously applies to the results of electoral competition as well. A less obvious application of the model is to agenda setting. John Kingdon has applied the model, however, to remarkable effect (Kingdon 1995).[11] Separate streams carrying problems, policies, and politics course through a community of political elites, intersecting haphazardly if not exactly randomly. Elements of each stream may

[11] He calls it a "garbage can model," but this counts as a type of evolutionary model.

combine with one another and flourish ("coupling," for Kingdon) should they be lucky enough to pass through a "window of opportunity," itself created by a confluence of macro and micro events. The result is that within the relevant subset of political actors, a certain problem, and a certain set of candidate policies, gets to be discussed, that is, treated as an "agenda" issue.[12]

4.3 Path-dependent Shaping of Policy Options

Today's policy options are a product of policy choices made previously—"the path"—sometimes decades previously. Hence the concept of "path dependency." Those earlier choices may have both a constraining, or "lock-in" effect and an opportunity-enhancing effect.

The current health care delivery system in the United States is an example of both such effects. Rationalizing the current system is constrained by the extensive system of employer-financed health insurance for employees plus the tax-exempt status of such insurance for the recipients. If employers could not offer this benefit, to keep employee total compensation at the same level they would have to increase the employee's *after-tax* income. This would cost employers more than they presently pay in insurance premiums. The public treasury also has a stake in the present employer-based system to the extent that any shift from employer financing to government financing would be a budgetary burden. Here we have two serious institutional barriers to shifting away from employer-based and tax-subsidized financing. The scheme overall rose to prominence in the 1930s, following the marketplace's invention of group-based health insurance and employers' perception that offering such insurance as a fringe benefit might foster worker allegiance and retard unionization (Hacker 2002, 199–202).

The evolved system, or the installed base as some would put it, constrains radical departures from it. Hence the lock-in effect. On the other hand, what started as an afterthought in the collective mind evolved into a full-fledged policy system, a very extensive system of health insurance for the working population and their families. As is the case with most tax-expenditure-financed policies, it multiplied by stealth far more than an on-budget financing scheme would probably have done. Hence what I called above the opportunity-enhancing effect.

Policy reforms are a special but nevertheless representative case of policy evolution processes in general, and Eric Patashnik has followed the course of three reforms over the years following adoption: airline deregulation in 1978, the 1986 tax reform (which lowered rates and broadened the base), and the Federal Agricultural Improvement and Reform Act (FAIR) in 1996 (Patashnik 2003). Although the rates have stayed low, the tax base has shrunk again, as special interests never laid to rest, chipped away at it.

[12] To this model, True, Jones, and Baumgartner add what they call a "serial shift" in attention. This involves both a shift in the object of attention and a self reinforcing process of attention growth from disparate quarters (True, Jones, and Baumgartner 1999, 103).

Similarly, the subsidies ended by FAIR have made a return. But the new flexibility given to farmers over planting decisions has been retained, since farmers made large investments in the expectation of continuation. These investments warded off any serious thoughts of diminishing the flexibility. Thus, reform got "locked in." Or perhaps one might better say that would-be meddlers got "locked out" (Schwartz n.d.). What is the difference between reforms that stick and those that don't? Those that stick develop constituencies that will be greatly aggrieved if the reforms don't stick.[13] Airline deregulation was successfully maintained because it created almost overnight a number of winners in the newly competitive airline industry who have resisted—or locked out—efforts to roll back the deregulation.[14]

What is the explanation for path dependency? In an influential line of thinking, nicely expressed in a paper by Paul Pierson (2000), the explanation lies in "increasing returns." In the context of production this means higher returns to the next increment of investment virtually without limit (without the normal process of diminishing returns setting in), as in the case of a software firm that creates larger network economies among its product users the larger the network grows. Pierson applies the idea to policy-making systems: it is easier politically to try to modify something already in place than to set out on a new course even if the new course is believed technically superior; and in any case, preferences endogenously shift towards the current policy configuration, giving it an automatically increasing return. Hence, there is a positive feedback loop. Pierson's conclusions are reasonable, but it is unnecessary and generally misleading to invoke increasing returns as an explanatory model. The imagery behind increasing returns is endogenously expanding opportunity, whereas the appropriate imagery for the policy-making process is typically endogenously increasing constraint (lock-in/out). Even in the case of opportunity-enhancing effects (e.g. tax expenditures facilitating the expansion of subsidized health care), the increasing returns model would still be misleading if in fact the marginal returns function were conventionally shaped (rising and then falling) and the observer accidentally focused only on the rising portion.[15]

The particular paths that policy has taken in certain spheres of regulatory policy bear special mention. Government regulation, market structure, common law rules,

[13] On the importance of constituencies as barriers to terminating policies in general, see Bardach 1976.

[14] For other examples of constituency creation that is intended to lock in policies, see Glazer and Rothenberg 2001, especially 78, 114. The 1977 Clean Air Act amendments forced expensive scrubbers on the coal burning utilities partly because, once the capital investments had been made, the industry would have little incentive to press for revisions in the direction of regulatory leniency. Glazer and Rothenberg also conjecture that military service academies plus minimum years of service requirements following graduation is a better way to subsidize officer training than to provide higher salaries during a career. The higher salaries strategy would be subject to policy reversals down the line; and, unwilling to take this risk, potential recruits might not sign up.

[15] One of the virtues of the "path" metaphor is that it reminds us that the character of the path depends on the distance from which it is observed. The same path that looks full of twists and turns to a pedestrian might look perfectly straight to an airplane passenger passing over it. The federal welfare reform Act of 1996 looks like a revolution close up (end welfare as an entitlement, require work as a condition of receipt, time limits on receipt), but from a distance it looks like a modest recalibration of some of the mutually interdependent terms in a fairly stable social insurance contract (Bardach 2001*b*).

and trade and professional association oversight often co-evolve. They are partial functional substitutes for one another in market conditions of information asymmetry combined with high transaction costs in common law enforcement. Thus, the regulation of milk and dairy products began in the early part of the twentieth century because consumers were uninformed and ill effects sometimes hard to attribute definitively or cheaply. As small retail groceries with open milk bins gave way to large supermarket chains, milk in cartons, better refrigeration, and the ability to monitor the quality of dairy farm conditions, the utility of government regulation declined. Dairy farms have in effect become vertically integrated into the operations of large buyers with a reputation to protect. In California, government inspectors have effectively been made into paid agents of the large buyers in all but name.[16]

4.4 Trial-and-error Learning

The policy process is in some sense a trial-and-error problem-solving process. Problems arise, citizens complain, and policy makers offer a policy solution. The solution works imperfectly (or not at all), the facts become known, and a new policy solution is devised. It too is imperfect, and the process then continues.

Although it is common to conceptualize trial-and-error learning as a negative feedback process (deviations from the goal stimulating adjustments that get closer to the goal), learning in complex and ambiguous problem situations is better thought of as a positive feedback process. The positive feedback element under these conditions has to do with the constantly improving store of information and analytical understanding about both the nature of the problem to be solved and the workability of potential solutions. By what mechanisms does this learning process work? And how well?

System-wide learning. Based on the literature, it is hard to answer these questions. Most of the literature on social and organizational learning refers to the private sector. It therefore assumes substantial goal consensus within the organization (profit maximization, typically). Rational analysis (variously interpreted), open communication, and open-mindedness are thought to be critical (Senge 1990).[17] The policy process, however, institutionalizes value conflict as well as consensus formation. Learning is undoubtedly present, and emerges from the work of advocacy coalitions (Sabatier and Jenkins-Smith 1993). However, it is typically much more effective in policy domains that lend themselves to technical analysis (e.g. worker safety and

[16] See Roe 1996 for an interesting evolutionary story about how government regulation of the securities market arose as a functional substitute for oversight by strong national banking firms, which failed to emerge because Andrew Jackson vetoed the rechartering of the Second Bank of the United States.

[17] Even under these conditions, it is hard for learning that occurs in small groups within an organization to diffuse to other units (Roth 1996).

environmental issues[18] more than child abuse prevention). Learning is also selective. What is learned is smoothed so as not greatly to deform the learner's preconceptions. Learning is also a matter of cultural, not merely cognitive change (Cook and Yanow 1996), and may be inhibited across the cultural communities existing within the borders of advocacy coalitions. If the policy-making *system* learns at all, and learns how to increase overall welfare rather than simply a partisan version of it, how might that happen?

One possibility is that turnover within elites brings to the fore, temporarily, a faction that learned something complementing and/or correcting what its predecessor took for granted. It is the Bendor process of oscillation enacted on a larger scale. Whether the temporary learning survives the next turnover, however, is a different question. In the political process it sometimes happens that new elites cast down the work of their predecessors simply because it was the work of their predecessors. One constraint on such a process is the presence of technically minded professionals in the orbit of the political elites. Nearly any agency or legislative body has at least some such individuals who will be a ballast for technical rationality.[19] And forums that manage to cut across opposed advocacy coalitions may be able to give technical rationality a better hearing than it otherwise might receive (Sabatier and Jenkins-Smith 1999, 145–6).[20]

Interjurisdictional learning. If a technical solution to a problem has been tried somewhere else and seems to work, it should have a leg up on ideas still untried. And if that somewhere else is a nearby jurisdiction, such as a neighboring state or city, so much the better. A momentum effect is likely at work: "the probability that a state will adopt a program is proportional to the number of interactions its officials have had with officials of already-adopting states" (Berry and Berry 1999, 172); and the potential for such interactions goes up as a function of the number of already-adopting states. In any case, there is by now solid evidence for the realism of regional diffusion models (Walker 1969; Berry and Berry 1999, 185–6). In the realm of public administration, a diffuse philosophy called "New Public Management," which is highly results oriented and sympathetic towards competitive outsourcing, entrepreneurial management, and other practices normally associated with business, has picked up momentum across many jurisdictions in the USA and also internationally (Barzelay 2001; Hood 1998; Hood and Peters 2004).[21]

[18] See, for instance, Perez Enriquez 2003; Taylor, Rubin, and Hounshell 2004. In the latter case, one must think of private sector entities (utilities and technology firms) as part of the relevant policy system.

[19] This does not mean they are without flaws and prejudices of their own. But on balance, across all agencies, and in the long run these flaws and prejudices are probably less harmful than those of the political elites whom the technical cadres serve.

[20] For an interesting exception to all the above a case where two ideologically opposed legislators set out on what proved to be a successful mission to learn jointly about welfare policy see Kennedy 1987.

[21] It started in the UK and in Australia and New Zealand in the early 1980s.

4.5 Complex Systems

Complex systems are hard to predict because they are hard to understand. The primary source of the complexity is the multiplicity of interactions within the system, or as Jervis calls them, "interconnections" (Jervis 1997, 17).[22]

The creator and guiding spirit of the "system dynamics" school of systems modeling since the early 1960s has been Jay W. Forrester, now emeritus of the Sloan School of Management at MIT. According to Forrester (Forrester 1968) and his interpreter George P. Richardson (Richardson 1991, 300), systems with multiple, non-linear, and high-order feedback loops are "complex." Cause and effect are not closely related in time and space, and are often counter-intuitive. They are also "remarkably insensitive to changes in many system parameters" (Richardson 1991, 301), presumably because their behavior is dominated by the structural interconnections between their components and between components and the emergent system itself.

Compensating feedback. Forrester and his disciples have long been interested in policy issues. They have concluded that "compensating feedback" mechanisms hidden in complex systems would often defeat policy interventions. For instance, in *Urban Dynamics* Forrester argued that government-sponsored low-income housing and a jobs program for the unemployed would create a poverty trap, expand the dependent population within the city, and diminish the city's prospects, while tearing down low-income housing and declining business structures would create jobs and boost the city's overall economy (Forrester 1969).[23] A systems dynamics study of heroin use in a community concluded that a legal heroin maintenance scheme for addicts would not stop heroin addiction because reduced demand from one subgroup would simply induce new users into the market to take up the slack, and pushers would more aggressively recruit new suppliers (Richardson 1991, 307–8).

Such studies are conducted by means of computer simulation. Although the model structure and parameters can be calibrated against reality to some extent, typically model construction requires a lot of guesswork. Hence, although it is quite possible that the models in these and other such cases were sufficiently realistic to give good projections, it is also possible that they were not, as critics have typically alleged. In any case, it is generally accepted that complex systems are indeed hard to predict, and often counter-intuitive and insensitive to their precise parameters.

Agent-based models. The systems dynamics school populates its models with "level" variables, feedback loops connecting these levels, and "rate" variables governing the feedback flows. It is in a sense a "top-down" approach to systems modeling, since the modeler must know, or assume, a lot about the structure and the parameter values. Robert Axelrod has pioneered a "bottom-up" approach to the modeling of systems, populating his models with a variety of independent agents who interact

[22] Robert Axelrod and Michael D. Cohen write, "a system should be called complex when it is hard to predict not because it is random but because the regularities it does have cannot be briefly described" (Axelrod and Cohen 1999, 16).

[23] Forrester was inspired to study the problem of the urban economy by a former mayor of Boston, John Collins, who occupied an adjacent office at the Sloan School for a time.

according to certain strategies. He has relied on computer simulation to project the emergence of empires, cultures, cabinets, business alliances, cooperative norms, metanorms, and perhaps everything in between (Axelrod 1984, 1997). In agent-based models, the relative densities of different types in the population change, as do the frequency of different strategies in use. Selection rules then allow these changing densities to propagate still further changes in the population (Axelrod and Cohen 1999, 3–7). When the community of agents seek to adapt to one another (even if that means "try to dominate"), Axelrod and Cohen speak of a "Complex Adaptive System" (1999, 7).

In their 1999 book Axelrod and Cohen sought to give advice to organizational managers (primarily) about how to "harness complexity." Perhaps the most valuable advice, in the authors' view and in mine, was the least specific: get comfortable with "the ideas of perpetual novelty, adaptation as a function of entire populations, the value of variety and experimentation, and the potential of decentralized and overlapping authority" (Axelrod and Cohen 1999, 29).

Simulation as a policy design tool. Almost any policy of significant scope and purchase will be intervening in a complex social, economic, political, and cultural system. Given its record of providing deep insights into the nature of complex systems, computer simulation is plausibly of some value as an aid for projecting the efficacy of alternative policy proposals or designs. The efforts appear to be fragmentary but growing.

One example is the work done, in the Forrester systems analysis tradition, by a group based at the State University of New York at Albany modeling alternative welfare-to-work program designs (Zagonel et al. 2004). For instance, they compared an "Edges" and a "Middle" policy and a Base Case fit to actual 1997 data. The Middle policy was designed to intensify investment in and emphasis on assessment, monitoring, and job finding. The Middle policy was implemented primarily by the social services agency. The Edges policy focused on what happened to clients before and after they entered the social services caseload. The relevant services were prevention, child support enforcement, and self-sufficiency promotion, functions not typically under the direct control of social services. The model contained various agency and other resource stocks. Somewhat surprisingly to the analysts, the Middle policy did not do well at all compared to the Edges policy in terms of reducing caseloads:

> To summarize the mechanism at work here, the Middle policy is great at getting people into jobs, but then they lose those jobs and cycle back into the system because there aren't enough resources devoted to help them stay employed. The Edges policy lets them trickle more slowly into jobs but then does a better job of keeping them there.

Another example is climate change models. Robert J. Lempert, Steven W. Popper, and Steven C. Bankes of the RAND Corporation are developing a computer-based tool for projecting the effects of various interventions to manage climate change as well as other such problems of large scale and long duration. They call the project "long-term policy analysis (LTPA)" (Lempert, Popper, and Bankes 2003, xii). Central to the generic LTPA problem is the inevitability of surprise and the consequent "deep uncertainty" about what to model and how to model it. They propose four key elements of a high-quality LTPA:

- Consider large *ensembles* (hundreds to millions) of scenarios.
- Seek *robust*, not optimal strategies.
- Achieve robustness with *adaptivity*.
- Design analysis for *interactive exploration* of the multiplicity of plausible futures. (2003, xiii)

They note that none of the computer models available for modeling climate change were suitable for their own work because the models "strive[d] for validity through as precise as possible a representation of particular phenomenology" (2003, 82). What they chose instead was almost the opposite, a simple systems-dynamics model, Wonderland, which provided the flexibility they needed "for representing crucial aspects of the robust decision approach—e.g., consideration of near-term adaptive policies and the adaptive responses of future generations" (2003, 82).

4.6 Chaos Theory

Even if most complex systems are insensitive to their parameter values, as Forrester contends, this is not true of all of them. System outputs that increase as a multiplicative function of their own growth and of the difference between their actual growth and their potential growth are an important exception. They exhibit four types of behavior depending on how intensively they react to this product, expressed by the parameter w in equation (3):[24]

$$y_{t+1} = wy_t(1 - y_t) \tag{3}$$

At low levels of reactivity, they approach a point equilibrium; at higher levels they oscillate stably; at still higher levels they are oscillating and explosive; and at the highest levels they show no periodic pattern at all and appear to be random—"chaotic"—even though their behavior is in fact completely determined (Kiel 1993; Baumol and Benhabib 1989). The set of points towards which any such system moves over time is said to be an "attractor."[25]

The time profile of such a system can also shift dramatically as its behavior unfolds. For this reason the behavior of the system will look very different depending on where in its course one first views the behavior, i.e. the first-observed value of y. Hence, the system is said to be sensitive to its "initial condition,"[26] although a more

[24] This is "[t]he most widely used mathematical formula for exploring [the] behavioral regimes [of interest]...a first order nonlinear difference equation, labeled the logistic map" (Kiel and Elliott 1996*a*, 20).

[25] For a discussion of the properties of five basic different attractors, see Daneke 1999, 33, and also Guastello 1999, 33 5.

[26] This sensitivity is often called "the butterfly effect" because the flapping of a butterfly's wings in Brazil could, by virtue of its happening within a chaotic system (weather), set off storms in Chicago.

meaningful characterization would usually be "the point at which we choose to start graphing it."

How much of the world really fits? It is still open as to whether chaos models realistically describe many phenomena of interest to students of policy or the policy process. I suspect it will always be difficult to choose between models of endogenously induced chaotic change and more commonsensical models of exogenously induced multivariate but linear change laced with pure randomness.[27] Chaos models can only be applied to substantially closed systems with a relatively long history, and it is not clear that such phenomena exist in great abundance. Macroeconomic systems are the most obvious (Baumol and Benhabib 1989).[28]

Unfortunately, because "chaos" is often used loosely, it may describe *any* non-linear complex process. For instance, Berry and Kim (1999) entitle a paper "Has the Fed reduced chaos?" when they mean by "chaos" a series of changing oscillating equilibria in two historical periods from the end of the Civil War through 1950. An even greater danger is that the "sensitivity to initial conditions" of chaos models will be applied to systems that are merely linear and therefore, in principle, much more manageable. Hamilton and West (1999), for instance, analyze a twenty-seven-year time series of teenage births in Texas and claim to find a pattern behind which lies a non-linear dynamic system, the character of which they do not explicitly define and for which they provide no plausible behavioral theory. Yet they conclude by warning that "a small change in school policy, health care accessibility or welfare eligibility can, due to feedback in the system, result in large changes in teen births." Were it only true in social policy that small changes *could* issue in large results! It is more likely that "compensating feedback" (see above) finds a way to dampen results.

Self-organizing systems. Decentralized systems with rich interactions and good information flow among the components are capable of evolving high degrees of internal coordination and productivity. They are "self-organizing." It is possible that their richest possibilities for attaining a high degree of self-organization occur when their interactions have reached "the edge of chaos" (Kauffman 1995). However, this proposition may apply most effectively to inanimate or at any rate non-human systems. Human beings may be able purposively to create the requisite interaction, variety, and communication in a complex adaptive system without having to push themselves to such a danger point. It is noteworthy that Axelrod and Cohen, in *Harnessing Complexity*, hardly refer to chaos or its edge (Axelrod and Cohen 1999, xv, 72).

[27] The interaction of chaotic systems and exogenous disturbances is also possible, of course. The result is "nonlinear amplification that alter[s] the qualitative behavior of the system." These are called "symmetry breaking"events (Kiel and Elliott 1999, 5).

[28] See also the persuasive efforts by Courtney Brown to apply chaos models to electoral phenomena, particularly to the rise of the Nazi Party in the 1930s (Brown 1995, ch. 5). Less persuasive are the political chapters contained in Kiel and Elliott 1996*b*.

4.7 Qualities-based Sequencing

So far we have been discussing what might be called the dynamics of quantities: the feedback loops tell us that the more (or less) of *x*, then the more (or less) of *y*. But there is no reason to eschew qualitative models where they are appropriate. The basic idea behind these can be summed up as: Sequence Matters.

In an earlier work (Bardach 1998) I have conceptualized the emergence of a well-functioning interagency collaborative—an "ICC"—as the result of a *building* process.[29] The process has a dynamic aspect, in that sequence makes a difference, just as in building a house it is only the erection of a frame that then permits one to install a roof, or the creation of a wall that will then constitute a medium for the making of doors and windows. Considered in feedback loop terms, each step feeds back into the emergence of a new state that affords a previously non-existent opportunity to reach the next-most state.

Opportunities. These states are qualitative. In the ICC case, they are defined by the variety of organizational and political building blocks that have been assembled on the way to building a functional collaborative. These would include, for instance: a workable operating system, a culture of pragmatism, a threshold quantity of real resources, a degree of political latitude, and a number of others. The full set is displayed in Fig. 16.2[30]. The sequence in which these elements are assembled makes a difference to how well the building process works.

Figure 16.2 in effect puts forward a hypothesis: it is more efficient and less risky to put the building blocks in place in the depicted sequence—starting from the bottom and moving upward—than it is to assemble them in any other sequence.[31] Space does not afford the opportunity to explain just why this developmental sequence might be more efficient and less risky than some alternative sequence of interest.[32] One example, concerning just one pairing in the sequence, must suffice, namely the proposition that trust should precede the acceptance of leadership rather than the other way around. Leadership is extremely useful for solving communications and other problems in an emerging collaborative (as indicated by the platforms above it in Fig. 16.2). It can be fragile, though, because the institutional partners in a typical

[29] "ICC" stands for Interagency Collaborative Capacity. It is a more precise term than "collaborative" because at any given moment in the evolution of the "collaborative" it may not be capable of doing much and the participants may be doing more arguing than collaborating. "Capacity" may be large or small, growing or shrinking; hence it can be construed as a continuous variable, which is analytically useful.

[30] Slightly modified from Bardach 1998, 274.

[31] The process of trying to execute better rather than worse sequences I call "platforming." I leave aside complexities such as the relatively weak but non trivial interdependence between platforms supporting the two different legs of the structure.

[32] See Bardach 2001*a* for further details. Nor is it clear which of all the alternative sequences should be held up to comparison. I acknowledge that empirical evidence bearing on the efficiency and risk properties of this sequence matter is fragmentary and merely suggestive (Bardach 1998, ch. 8). The main point, though, is not to assert the truth of this particular developmental hypothesis but to illustrate the nature of reasoning about how sequence might matter.

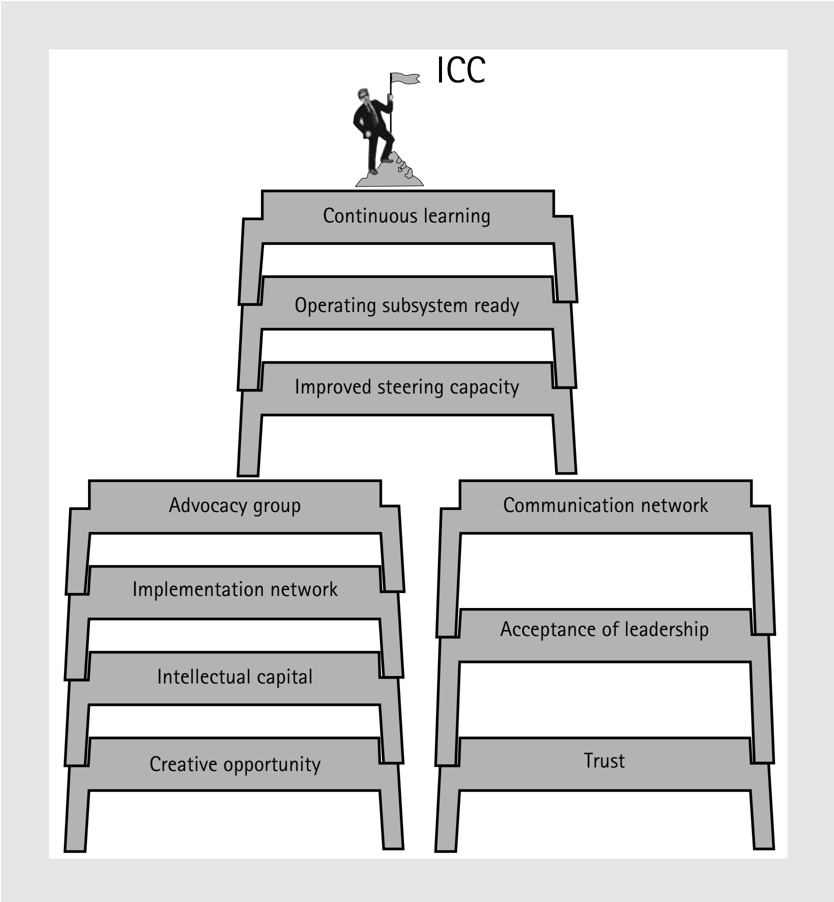

Fig. 16.2. Each new capacity a platform for the next

collaborative are moderately suspicious of one another. Thus, leadership will function best if a prior base of trust can be established.[33]

5. Dynamics without Feedback Loops

Not all dynamics processes involve feedback loops. Some unfold in only one direction.[34]

[33] There is more to the dynamics of ICC construction than platforming, I would note. Building momentum of various kinds is also significant (Bardach 1998, 276 92).

[34] Some systems dynamics theorists would question this possibility. They would say that nothing fails to produce feedback of some kind, however indirect. This is true. Nevertheless, as mentioned earlier, to