Vicious Circles in Organizations

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This paper explores vicious circles in organizations. Departing from some elementary notions of action theory and cybernetics, it analyzes the dynamics, the clustering, and the survival chances of vicious circles. It argues that the action perspective, taken to its logical conclusion, implies that many structural suboptimalities of organizations, such as underperformance, stagnation, or decay, are caused by vicious circles.•

INTRODUCTION

Today, most social scientists agree on the nature of social systems. They contend that neither Divine Will, nor legal statutes, nor the assemblage of architectural artifacts is sufficient to keep such systems alive. They hold that human activity determines the character and behavior of these systems. The first to express this view clearly was Max Weber (1947), who insisted that any specifically social phenomenon should be understood as a network of individual yet reciprocal human actions. Parsons (1937), dubbing this approach "action theory," showed that the same view was implicitly present in the writings of Weber's major contemporaries such as Durkheim, Pareto, and Marshall. He suggested that this convergence may reflect some fundamental truth that manifests itself in any serious thinking about societies. And even today, while many social scientists agree to disagree, most of them, regardless of their paradigm, still stick to the action perspective.[1]

Unfortunately, it has proven difficult to apply this view consistently to organizations or other social systems. It often appears impossible to trace the behavior of such systems back to the actions of individuals. The problem, sometimes referred to as "the transformation problem," is rooted in the intentionality of individual actions. Supposedly, individuals act with some degree of purpose, yet the sum total of their interactions is often at variance with their intentions. In short, their activities have side effects. Such side effects may create nothing but random outcomes. Frequently, however, social systems display regularities that make little sense in terms of individual intentions. Side effects sometimes follow a logic of their own (Platt, 1973; Boudon, 1977, 1981; Schelling, 1978; Elster, 1980). They are in concert, although neither a conductor nor a score appears to be present.

Side effects are not necessarily undesirable — the marketplace, for example, has proven a superb orchestra in transforming private vices into public virtues — but frequently they are. Business cycles upset economies and economists alike. Arms races accelerate. Many organizations decline or underperform consistently. Some hidden score is present, but it is not the request program that is played. Yet, whose program is it? How is it possible that human beings can act purposefully in ways that frustrate their purposes?

Metaphysical approaches aside, two answers are possible. People ask for too much, or they don't know what they are doing. In the first case, they cling to standards of desired outcomes that are unattainable. Their "normative expecta-

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Action theory is evident in the systems theory of Luhmann (1982), in Schutz's (1967) phenomenology, in Habermas' (1984) critical theory, in the symbolic interactionism of Blumer (1969), and in Giddens' (1979) post-Marxism.

tions'' (Luhmann, 1972) are unrealistic. In the second case, however, they do have more promising alternatives. They *should* do better because the outcomes are (partially) undesired; they *could* do better because better alternatives are available; and they are *trying* to do better because their actions are held to be purposeful, thus rational. But they don't do better. They are somehow trapped in the web of their own actions. The hidden score is their own, but they don't like the music. Unable to stop, they play the unpleasant tune over and over again.

The emerging picture begins to resemble a vicious circle. By trying to avoid undesired outcomes, human actors actually create these outcomes. And by continuing their activities, they continue to reproduce those undesired outcomes. Understanding the logic of vicious circles should therefore increase the understanding of undesired organizational behavior (as well as the behavior of other social systems) and possibly help to improve it.

ACTION LOOPS AND VICIOUS CIRCLES

The singular human act, or ''unit act,'' is usually regarded as the basic element of a social system (Parsons, 1937). It comprises an individual actor, a situation to act upon, the actor's purpose, and the activity itself. In pursuing his or her purpose, the actor may behave more or less consciously, although not every singular act coincides with the ideal of rational action, i.e., action that follows the logic of optimal choice. Irrational action, on the other hand, is absurd from the point of view of the individual actor, since it implies the paradox of someone purposefully frustrating his or her own purpose.

A singular act brings change. By changing a given situation, however, a unit act does not yield the structure necessary to build a social system. To create a structure, actions have to be repeated (Weick, 1969). A change, generated by a single act, has to be neutralized by a counterchange that reproduces the original situation. In short, the basic element of any action structure is the action loop, not the singular act. An action loop occurs when an activity entails a chain of other activities which, in turn, ultimately re-create the original situation. With the re-creation of the original situation, the loop can repeat itself, and a network of activities can emerge that can develop and maintain its own identity in a given environment. Such networks are here understood as systems. The foremost example of social systems are formal organizations (Parsons, 1956; Katz and Kahn, 1966; Thompson, 1967; Pfeffer and Salancik, 1978).

The theoretical analysis of action loops has primarily been undertaken in cybernetics (for an overview, see Richardson, 1983), where they are referred to as feedback loops. Feedback loops are action loops that are either approaching some arbitrary reference point or moving away from that point. Usually, they are called negative or positive feedback loops, depending on whether they are moving away from or approaching the reference point. The reference point itself can be determined in two different ways: by making value judgments (i.e., by defining some desired standard) or by assessing facts (i.e., by referring to some factual state of affairs). Some additional

terminology may help to make the point more explicit. Negative feedback loops are called "deviation-counteracting" when related to normative standards and "self-correcting" when related to a factual point of reference. Positive feedback loops, on the other hand, are called "deviation-amplifying" when related to norms and "self-reinforcing" when related to facts (Figure 1). Predator-prey interaction is self-correcting, for example, whereas a nuclear chain reaction is self-reinforcing. A runaway nuclear arms race is deviation-amplifying (if peace is the normative point of reference), whereas successful arms talks are deviation-counteracting, given the same point of reference (see Figure 2). In this paper, vicious circles are defined as deviation-amplifying loops, i.e., action loops with counterproductive results.

	POINT OF REFERENCE	
	Normative	Factual
Positive Movement	Deviation-amplifying loop	Self-reinforcing loop
Negative Movement	Deviation-counteracting loop	Self-correcting loop

Figure 1. Positive and negative feedback loops.

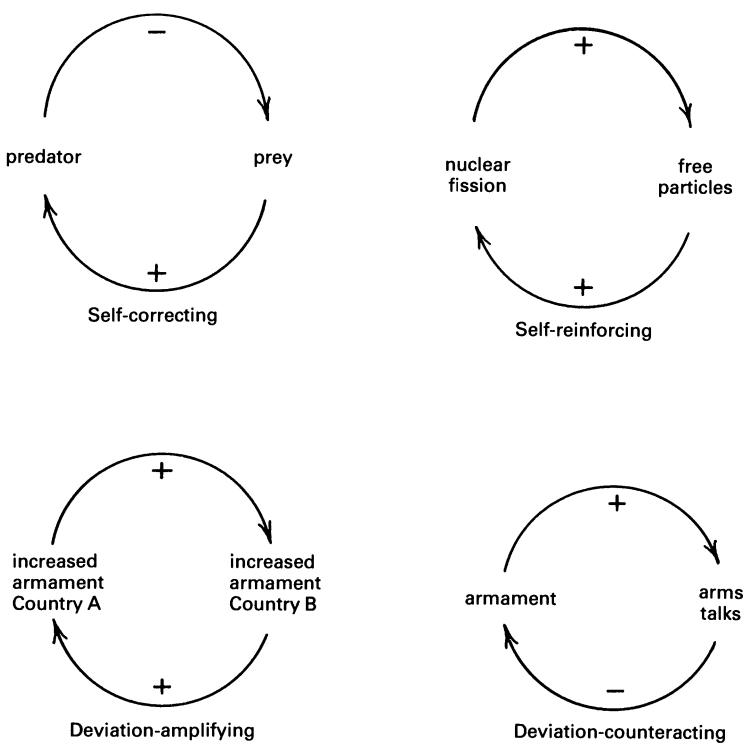

Figure 2. Examples of positive and negative feedback loops.

Factual and normative behavior of action loops often coincide, but not always. A desired state of affairs can also reflect change, as economic growth does, for instance (Kuhn and Beam, 1982). On the other hand, some deviation-amplifying loops are self-correcting. For example, zero growth in an economy is usually assessed as stagnation, as a self-correcting process that deviates more and more from the desired path of expansion. The cross-tabulation of the factual and the normative aspects of action loops yields the simple typology illustrated in Figure 3. Note that although two kinds of deviation-amplifying loops are distinguished here, only one of them ("crisis") exhibits the typical features of such a loop. The other one ("stagnation") may be hidden under the surface of factual inertia.

	FEEDBACK: Deviation-amplifying	FEEDBACK: Deviation-counteracting
Self-reinforcing Feedback	Undesired change (Crisis)	Desired change (Development)
Self-correcting Feedback	Undesired permanence (Stagnation)	Desired permanence (Stability)

Figure 3. Typology of factual and normative aspects of action loops.

Whether an action loop has the properties of a vicious circle depends on the normative point of reference. A clear-cut identification of an action loop as a vicious circle presupposes the opportunity to state clearly what the purpose of an action is and who is justified to make such statements. Many actions, however, are not accompanied by goal statements; many goals are not clearly stated; many statements are not clearly justified; and too many people make too many different statements. Economic growth, for example, may be welcomed by those who fear unemployment, while environmentalists may disapprove of it. In addition, the evaluation of any activity in normative terms is a matter of judging the judgment of those who participate in that particular activity. One may even ask whether a vicious circle could continue to exist were it known to its participants.

Unfortunately, little can be done about these ambiguities. Any classification of an action loop remains somewhat arbitrary, depending on which and how many actors are involved, how conflicting their goals are, and other factors. There are, nevertheless, many instances in which the counterproductivity of a feedback loop is hardly disputable.

DYNAMICS OF VICIOUS CIRCLES

Vicious circles are usually conceived as spiraling processes, like Merton's (1957) famous "tragic circle of self-fulfilling prophecy." In times of crisis, rumors cause nervous clients to

rush to the counters of a bank. Its liquidity is endangered as more and more clients become more and more nervous. Finally, bankruptcy is imminent. The vicious circle involved describes the interaction between two variables that are crucial for the organization's survival: trust and cash flow. The bank needs the trust of its depositors, since its operation is based on the principle of lending out the deposits. But it also needs a certain amount of cash in order to meet the actual demand for liquidity that the depositors may have.

Initially, trust and cash flow may be sufficient to keep the system in equilibrium and to prevent a significant number of clients from panicking. As the general economic condition deteriorates, however, the likelihood increases that rumors may be taken seriously. A critical threshold may be crossed sooner or later. Then, a contracting circle sets off. Declining trust leads to a smaller cash flow, which, in turn, reduces the level of trust further, and so on. Ultimately, trust as well as cash flow are reduced to zero and the bank is forced out of business. Unless brought to a halt by exogenous forces, all contracting circles will display the same self-terminating dynamic. Once set in motion, a decrease in one variable will cause similar decreases in other variables. Once the critical threshold is crossed, nothing can stop contracting circles. They are bound to a self-terminating dynamic.

Expanding circles have a different dynamic. Their growth depends on iteratively increasing variables. This process has to be fed by outside resources, yet resources are scarce in a finite world. Eventually, every expanding circle will reach a ceiling when no additional resources are available to feed further expansion (Mazur, 1978). Borrowing from the jargon of economics, one might say that the marginal causality of an expansive loop will decline past a certain point to become zero in the end.

An example of the dynamics of expanding vicious circles can be seen in the "vicious circle of bureacracy," the only deviation-amplifying feedback that has been extensively examined in the literature. Originally discovered by Merton (1957), it has been subsequently discussed and refined by such authors as Gouldner (1954), Argyris (1957, 1964), March and Simon (1958), Thompson (1961), Crozier (1964), Downs (1967), Lawler (1976), and Dunbar (1981), among others. The circle has the following general shape. The management of an organization attempts to bring about some change, such as raising productivity. It does so by rule making, close supervision, or other bureaucratic measures — in short, by increasing formalization. Instead of helping the organization reach its goal, these measures trigger apathy, alienation, or other dysfunctional reactions in the work force. Management, unsatisfied with the results but unaware of the real causality, further increases the pressure on the system, and around comes the circle.

At some point, however, management will have exhausted its repertoire of control techniques, and the circle slows down. The prevailing apathy is "walled in" (Gouldner, 1954), and the system gets "blocked" (Crozier, 1964). Finally, the circle stagnates. The circle is nevertheless still active. Control measures are constantly enacted, as is apathy. The circle has become a normal, yet suboptimal state of affairs. Acquiescing, the organization goes Sisyphus.

The vicious circle of bureaucracy is not the only stagnating circle that upsets organizations. Four other well-known organizational pathologies also illustrate this point.

Pathological status systems (Barnard, 1946; Türk, 1975; Neuberger and Duffy, 1976). Organizations make use of status systems in order to induce high performance. Once granted, a given status is not easily revoked, however. Additional status stimuli are created and status inflation results. The meaning of status decreases, until the status system has lost its stimulating function.

Pathological communication systems (Downs, 1967; Altheide and Johnson, 1980; Fischhoff, 1982; Wildavsky, 1983). Information becomes biased while floating up the organization's hierarchy. Counterbiasing techniques are applied to compensate for that tendency. This evokes additional biasing as well as counterbiasing. Officially reported information loses its significance, and the organization falls back on rumors and other intelligence techniques to gather information.

Pathological growth (Parkinson, 1958; Downs, 1967; Breton and Wintrobe, 1982). Administrative units in organizations expand due to Parkinson's Law (bureaucrats tend to multiply subordinates, not rivals, and make work for each other). As the organization grows top-heavy, further expansion is increasingly difficult to support. Ultimately, a ceiling on size is attained. Buchanan and Tullock (1977) have pointed out that the same logic may also apply on a macroscale. While growing, public bureaucracies may absorb more and more resources until taxpayers finally run out of money.

Pathological conflict (Vickers, 1968; Reich, 1981; Masuch, 1984). Bureaucratic activities (e.g., regulation) trigger the installation of counterbureaucracies. The conflict seesaws, until all bureaucractic energy is absorbed and further escalation becomes impossible.

These pathologies suggest that stagnating vicious circles are not infrequent in social systems. Such a statement is hard to verify empirically, but it follows analytically from the implications of the action perspective. Action structures are reproductive, by definition. Consequently, any nuisance that is not simply a passing problem, but is a structural suboptimality (e.g., overbureaucratization, overcentralization, underdevelopment), is also reproduced. Since suboptimality cannot, by definition, be intended, any structural suboptimality must somehow be based on stable vicious circles.

VICIOUS CIRCLES IN COMBINATION

Within social systems, action loops are embedded in a network of other action loops; stagnating circles even depend, in a paradoxical sense, on their environment for survival. There is an infinite variety of possible combinations of action loops, but two elementary clusters can be singled out.

Explosive clusters. Explosive clusters combine two or more positive feedbacks, at least one of which is deviation-amplifying. Parkinson's law illustrates the most simple case in which two circles (bureaucrats multiply bureaucrats, and bureaucrats make work for each other) reinforce each other.

Yet, explosive clusters are not restricted to such simple combinations.

In the case of a declining university, as discussed by Cyert (1978), the organization faces decreasing growth rates. This reduces promotion opportunities within the organization and weakens its attractiveness to outstanding new participants (the first vicious circle). Quality inside the organization declines, so that the organization is forced to look elsewhere in order to fulfill the few top positions, thus decreasing promotion opportunities further (a second circle). The organization cannot maintain the former standards of excellence and loses students (a third circle). More financial problems creep up and are dealt with by raising tuition and reducing salaries. Two additional circles (four and five) are thus triggered: more students stay away, while more good faculty members depart for better positions elsewhere. The explosion — or, more precisely, the implosion of vicious circles — may eventually lead to the actual collapse of the organization.

Organizations of somewhat longer standing usually possess considerable reserve buffers, slack, emergency procedures, and the like to weather the storms of organizational life. They do not walk a tightrope. However, their deviation-counteracting capacity is not unlimited. If a number of deviation-counteracting loops break down at the same time or if the pressure becomes too great, this capacity may be exhausted (Turner, 1976). Once a critical threshold is passed, one vicious circle gets its chance and triggers other circles, thereby exhausting whatever remains of the organization's resiliency. A ''vicious'' chain reaction runs through the already scattered action structure and destroys it. In the disaster literature, this is termed ''nonlinearity'' (Perrow, 1984).

All declining organizations must pass that threshold before they collapse, because the threshold is the point of no return. It is the dividing line between a situation in which rescue might still be possible and one in which it is too late. The existence of the threshold allows one to formulate a general survival condition for organizations. To avoid collapse, an organization must merely avoid reaching the threshold. In order to do so, the organization must perform three tasks: (1) identify the threshold condition, (2) identify possible dangers in the environment and their potential impact (i.e., the distance over which they may push the organization closer to that threshold), and (3) muster sufficient reserves to be able to buffer adverse effects.

The literature on organization failure shows that every collapsing organization has, in fact, violated at least one of these three conditions (Whetten, 1980; Greenhalgh, 1983). Either organizations have lost their capacity to identify hazards in a changing environment or they are no longer able to calculate the risks (i.e., the threshold condition) correctly (Aguilar, 1967; Hall, 1976; Starbuck, 1983). Or, they have not been able to muster sufficient buffers, which is the major cause for the ''liability of newness'' of young organizations (Stinchcombe, 1965; Kaufman, 1975; Perrow, 1979). Or, they have inadvertently used up their buffer resources, for example, by engaging in a large high-risk development project (Argenti, 1976).

Monitored clusters. Monitored clusters combine one or more deviation-amplifying circles with one or more negative feedbacks. Monitored clusters account for the existence of stagnating vicious circles. Such circles are, in fact, expanding loops that encounter one or more negative feedbacks during their career. The vicious circle of bureaucracy (Crozier, 1964; Vroom, 1980) illustrates this point. During its expanding phase, apathy increases along with the level of control. Past a certain point, however, additional control devices become scarce and a negative feedback is created. It puts a check on the circle's further expansion, as shown in Figure 4.

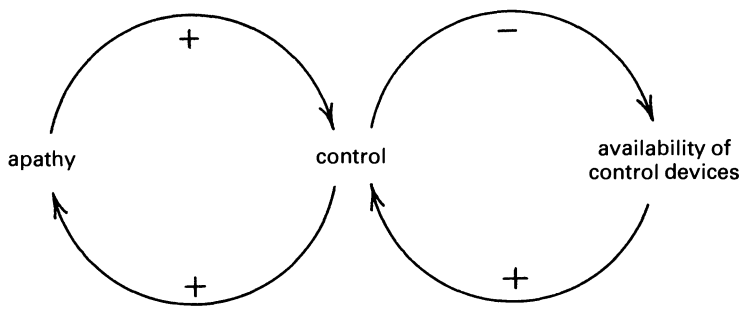

Figure 4. The vicious circle of bureaucracy.

Scarce resources guarantee that any expanding loop will be brought to a halt, even without the purposeful interference of human actors. Such interference may nonetheless occur. The consequences of a circle may be perceived, while the cause, the circle itself, remains obscure. Measures are taken to keep the problem under control, but they do not really solve it. This is a classic case of treating the symptoms. A better cure could be administered were the true causality known to the participants.

A variant of the formalization loop is that analyzed by Argyris and Schön (1978) and Argyris (1982). Apathy is a problem, but its true cause remains undiscovered. Human relations devices are applied to counteract it and do yield some effect, so that the loop comes to a halt before management has exhausted the available instruments of control. Yet, the situation is suboptimal. A lower level of apathy could have been obtained more effectively by lowering the level of formalization than by the human relations treatment, as shown in Figure 5.

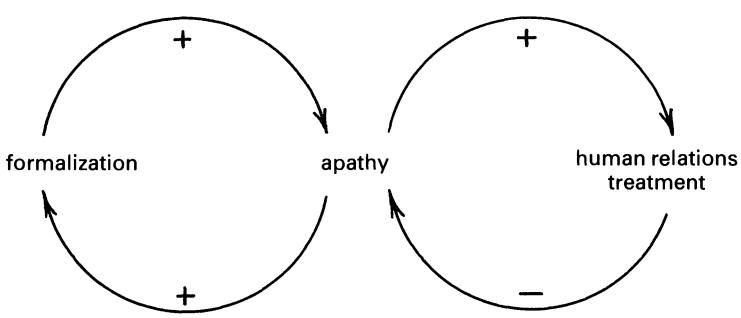

Figure 5. Variant of the formalization loop of bureaucracy.

Because it represents in a nutshell the logic of irrational (i.e., unnecessary) conflict, one more specific form of monitored clusters should also be noted here. Such a cluster is created when a simple two-loop cluster triggers an additional negative loop (of ambiguous normative standing). Crozier's own interpretation of the "vicious circle of bureaucracy," as he labeled it, illustrates this possibility. He observed that in some organizations increased formalization reduces the elbow room of all participants, not solely that of the work force (Crozier, 1964, 1970). A third loop is created, once the workers or their unions discover the appeasing effect of high formalization. Then, the unions may push for even more formalization in order to restrict management's power, as illustrated in Figure 6.

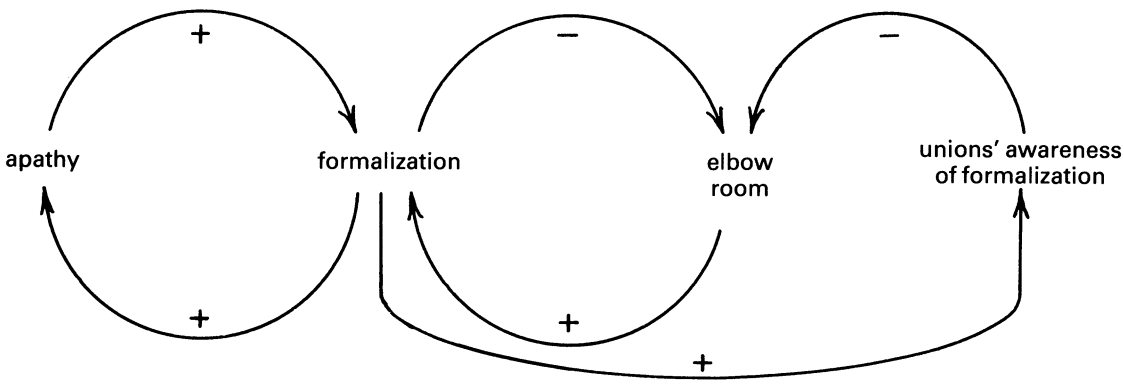

Figure 6. Irrational conflict: Crozier's "blockage."

Crozier used the term "blockage" to describe this structure. The label is well chosen, since it conveys what the cluster does — or, more precisely, what it cannot do. The return to a more rational state of the system is blocked because the second, self-correcting circle obscures the effect of the first (vicious) one. The second circle misleads the participants to accept the present level of apathy as the bottom line. Aware of worse alternatives, but unaware of better ones, they start to defend the present suboptimal state of affairs and create the third circle. What is blocked is, in fact, the escape route to a better solution.

All elements of an irrational conflict are present (Dunbar, Dutton, and Torbert, 1982). In the first loop, inadequate understanding of the situation leads to irrational action and creates a potential for conflict. The second and the third loops then produce the stalemate: the second creates the illusion that things can only get worse, and a third circle is then created to prevent them from getting worse. But it also prevents things from getting better. The structure has provoked a cleavage of interest, so that one side (in this case, management or organized labor) is "right," under the assumption that the other side is "wrong." Both are wrong, though, because a better solution (in this case, higher productivity with less control) is attainable.

EMERGENCE AND PERSISTENCE OF VICIOUS CIRCLES

Vicious circles lead an absurd existence, since everyone should avoid deviation-amplifying feedbacks. Yet, once caught

in a vicious circle, human actors continue on a path of action that leads further and further away from the desired state of affairs. Why this happens has already been suggested implicitly. Human actors create a vicious circle because they lack an adequate understanding of their situation. For example, were the managers in the vicious circle of bureaucracy aware of the counterproductive effects of overcontrol, they would pursue a different policy. But, instead, they cling to a machine model (March and Simon, 1958) of human behavior. Subordinates are treated like machines, but they don't react like machines. Not understanding the underlying causality, management continues on the once-chosen path, and the circle comes around again.

Whenever a single actor or a group, behaving virtually as one actor, is causing the circle and the counteraction necessary to complete it can be seen as reactive behavior, the deviation-amplifying feedback can be attributed to an inaccurate definition of the situation. If the actor were aware of the circle, he or she would prefer to avoid it and could do so either by doing nothing or by choosing a better available alternative.

The same holds for strategic interaction, that is, when the outcome is jointly created by two or more independent actors. The best-known strategic interaction is perhaps the arms race (Schelling, 1960; Kahn, 1965). The elementary action structure in this case is a conflict between two parties. Each side dedicates a certain part of its resources to that conflict. At any given moment, both sides have to ponder whether they should escalate. Escalation may bring superiority if the other side does not escalate. If both sides act in the same way, the status quo is maintained, either at a higher and more costly level or at a lower level of conflict intensity. Given that inferiority is worse than spending additional resources on the conflict, the payoff matrix shown in Figure 7 results.

		ORGANIZATION B	
		Nonescalation	Escalation
ORGANIZATION A	Nonescalation	95, 95	85, 100
	Escalation	100, 85	90, 90

*The payoffs are given in absolute numbers. Here, only the ordinal order is important. 100 is the best, 95 the second best, 90 the third best, and 85 the worst outcome. The first number in a quadrant gives the payoff for A and the second one that for B.

Figure 7. Payoff matrix of a two-organization conflict.*

In this interaction, which has the structure of the "prisoner's dilemma" game, both sides could stop the escalation by acting jointly. But because the conflict prevents them from doing so, it may appear that both will have to opt for escalation; otherwise, they risk being duped by the other side. Yet, the future of the conflict should make both actors think twice. Each round of the game starts at the level of the previous round, so that payoffs decrease; less and less resources can be dedicated to

the organization's original mission. This, in fact, is the vicious circle. Figure 8a shows the sequence of payoffs in five consecutive rounds of the conflict. As long as both players follow the minimax rationality recommended by game theorists for this case, both must try to avoid the worst possible outcome and choose escalation (the southeastern quadrant). This is also the nonescalation payoff for the second round of the game. In the next round played, the conflict moves to the next southeastern quadrant and so forth. Figure 8b gives the payoff matrix in which nonescalation in the first round is confronted with the payoffs that result when the escalation has been repeated four times.

95, 95	85, 100			
100, 85	90, 90	80, 95		
	95, 80	85, 85	75, 90	
		90, 75	80, 80	70, 85
			85, 70	75, 75	65, 80
				80, 65	70, 70

Figure 8a. Sequence of payoffs in five consecutive rounds of the conflict shown in Figure 7.

95, 95	65, 80
80, 65	70, 70

Figure 8b. Payoff matrix in which nonescalation in first round is confronted with payoffs from repeating the escalation four times.

Both sides should discover that the best payoff obtainable after a certain number of repetitions is worse than the worst was at the beginning (Figure 8b). Consequently, both will avoid escalation, even at the risk of the other side gaining superiority. What makes them escape is the fact that payoffs actually decline, as opposed to what would happen in a tit-for-tat metagame situation in which the payoffs are the same in every round played.

This result can be generalized to other strategic interactions in which payoffs deteriorate.[2] Past some point in the evolution of the game, payoffs will become poor enough so that both sides accept the risk of the fourth-best outcome at the start. The knowledge of the vicious circle should be sufficient for each side to avoid it (Axelrod, 1981). If vicious circles persist in strategic situations, some misperception must be present. For example opponents may overestimate each other's agressiveness and underestimate each other's rationality (Jervis, 1976).

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Among the 78 different 2x2 games are approximately 30 that can be played with circular results (Rapoport and Guyer, 1966), not to mention those that are possible in more complex games.

The ramifications of vicious circles put pressure on the participating actors to consider their original understanding of the situation and to search actively for the hidden cause of the problem. Why do they fail to find it? There are three factors that explain why a feedback loop, the very model of inductive or enactive learning, might derail in such a way as to keep a vicious circle alive: (1) participants' cognitive disposition, (2) the complexity of the situation, and (3) the self-sealing structure of vicious circles.

Cognitive dispositions. Many cognitive dispositions bias actors against perceiving vicious circles. First, people find it less difficult to think in chains than in networks or loops (Dörner, 1975, 1980; Axelrod, 1976; Simon, 1979). Second, they are perceptually biased against inconsistencies, i.e., causal relations between events that they like and others they dislike (Abelson et al., 1968; Salancik, 1982). Yet, since vicious circles frustrate the good intentions of their originators, they always imply psychologically unacceptable causalities. Third, individuals are prone to attribution errors (Kelley, 1971; Staw, 1975; Kelley and Michela, 1980). Failure is more likely to be attributed to others than is success; this increases the likelihood that the counterproductive consequences of one's own actions will be seen as the faults of others. Fourth, human actors tend to avoid cognitive dissonance (Festinger, 1957; Staw, 1976; Aronson, 1978; Staw and Ross, 1978). They may reiterate an unsuccessful definition of the situation for the very reason that it failed earlier. Fifth, their cognitive capacities are reduced under threat (Smart and Vertinsky, 1977; Staw, Sandelands, and Dutton, 1981). The more threatening the ramifications of a vicious circle, the less likely that it will be detected in time. Sixth, they tend to adjust their aspiration level to the facts (Helson, 1964; Janis and Mann, 1977). They may come to accept a problem as normal, before discovering its source.

Complexity. Complexity, here understood as the number of possible causal links within an action structure, enhances the birth rate as well as the life expectancy of vicious circles. First, complexity increases the likelihood of side effects, and because vicious circles always result from side effects, complexity will increase the birth rate of vicious circles. Second, as complexity increases the probability that intricate causal structures will occur, it increases the likelihood of long, multilinked circles. These are especially difficult to discover, since they may complete themselves beyond the horizon of each of the participants (Baumgartner and Burns, 1980, 1981). Third, except in highly munificent environments (understood here as those in which there is a higher than 50 percent chance that any random action generates positive, desired outcomes), complexity decreases the chance that enactive, trial-and-error learning will be successful. Once caught by complexity in a vicious circle, the participants will find it difficult to escape by mere chance (Perrow, 1984).

Self-sealing structures. Certain vicious circles affect the perception just as some diseases affect the immune system of the body. First, vicious circles can generate a complexity that both creates them and hides them. Overregulation, for example, creates overcomplexity in the legal system and triggers demand for additional regulation, while the same complexity

complicates adequately understanding the situation (Wahl, 1980; Mitnick, 1980; Reich, 1981). Overcentralization creates decision overload or "switchboard" problems, so that inundated decision makers at the center make poor decisions. Additional problems and more decision overload are the result (Deutsch, 1966; Mintzberg, 1973). Second, vicious circles can create a variety of threat-rigidity or threat-anxiety loops in which the actual danger is aggravated by anxiety-affected decision making (Janis and Mann, 1977; Argyris and Schön, 1978; Staw, Sandelands, and Dutton, 1981; Perrow, 1984). Third, vicious circles may induce pathological perceptions with self-aggravating consequences (Kets de Vries, 1980). For example, the cohesion of an organization may depend on mythical fantasies about the leader's supernatural abilities in such a way that each of the leader's failures necessitates a reinforcement of those fantasies (Smith and Simmons, 1983). Or cohesion may depend on an exotic interpretation of the outside world that triggers exotic behavior with consequences that are self-fulfilling prophecies (Neidhardt, 1983).

These factors do not rule out the possibility that vicious circles may be anticipated, and avoided, by proactive learning or be discovered in time by alert participants. The literature on learning shows, furthermore, that failure increases the readiness of individuals to redefine their situation (Hedberg, 1981), and this should increase the chances of detecting vicious circles. Yet perceptual biases, complexity, and self-sealing loops can explain why vicious circles survive. Whether vicious circles persist depends on their surrounding network. Action loops depend on an action structure for survival, which is only provided by systems. But, in systems, vicious circles can build up like malignant tumors in the body.

The accumulation of vicious circles may explain organizational stagnation. Within action structures that are not highly munificent, side effects have more negative than positive ramifications. Consequently, within a slowly, incrementally changing action structure — as is typical in normal, stable organizations — more and more action loops are accidentally created that have negative effects on the balance (Miller, 1982; Forrester, 1975). Figure 9, a diagram from Peters and Waterman (1982) illustrates this point. This diagram, drawn by a manager of a would-be new venture in a moderately high-tech business, outlines the clearance procedure for a new product. The circles in the diagram represent organizational units and the straight lines depict formal linkages. There are 223 such formal linkages. As Peters and Waterman pointed out:

> Needless to say, the company is hardly first to the marketplace with any new product. The irony, and the tragedy, is that each of the 223 linkages taken by itself makes perfectly good sense. Well-meaning, rational people designed each link for a reason that made sense at the time — for example, a committee was formed to ensure that a glitch between sales and marketing, arising in the last product rollout, is not repeated. . . . The other sad fact is that when we use this diagram in presentations, we don't draw shouts of "Absurd." Instead, we draw sighs, nervous laughter, and the occasional volunteer who says, "If you really want a humdinger, you should map our process." (1982: 17–19)

What Peters and Waterman describe is nothing less than the accumulation of counterproductive side effects, in short, stag-

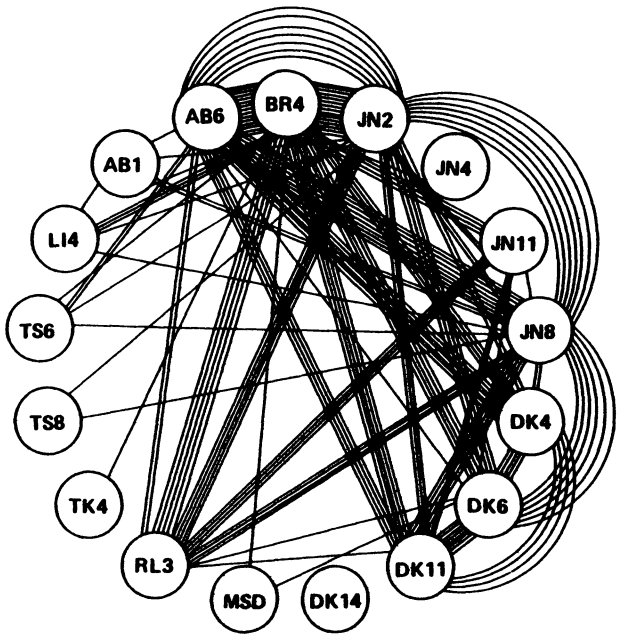

Figure 9. New product sign-off procedure. (Reproduction from Peters and Waterman, *In Search of Excellence,* p. 18.© 1982 by Thomas J. Peters and Robert H. Waterman, Jr. Used with permission of the authors and Harper & Row, Publishers, Inc.)

nating vicious circles. The normal, incrementally developing organization will always exhibit a tendency toward stagnation, unless this is offset by high munificency or by repeated reorganizations that break the ties and the circles of stagnation (Olson, 1982).

VICIOUS CIRCLES IN COMPLEX ORGANIZATIONS

In order to summarize, a simple model of the transitory stages in the history of an organization (Figure 10) is constructed, based on Miller and Friesen's (1980) "Archetypes of Organizational Transition."

Growth → Bold Leadership → Collapse. It is assumed that the organization, like many other successful ones, has been erected by a talented entrepreneur. It has survived the hazards of young age and seen a considerable period of rapid, eventually too rapid, expansion. Relying on the dynamics of self-sustained growth, the leader pushes for further expansion. Two dangers are present. First, normal errors, some disadvantageous acquisitions, for example, exhaust the organization's buffers. Second, the environment, which must have been munificent in the past to sustain high growth rates, may change and become less benevolent. The pace of expansion is too fast under the new conditions; again, buffers may be exhausted, so that collapse is imminent.

Growth → Bold Leadership → Decline → Collapse. A similar development may occur as the result of a leader's age. Having had his best times, he may become less flexible, his intellec-

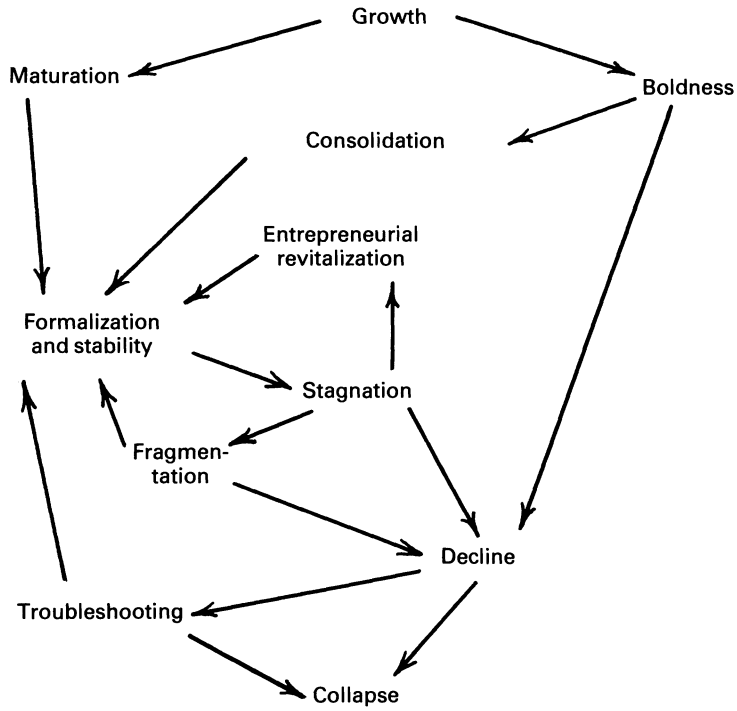

Figure 10. Model of the transitory stages in an organization's history.

tual capacities may shrink, and his behavior may change. For example, he may be more hesitant to delegate authority, and his attitudes toward bad news may encourage information biasing. Various circles of suboptimality such as overcentralization, formalization, or information biasing develop. High performers leave, while outside talent stays away, so that a vicious circle of mediocrity forms. Under more extreme circumstances, psychotic organizational cultures develop. For example, to survive in the leader's entourage, managers may have to reaffirm the leader's crotchety viewpoints. Contact with reality is gradually lost. Only the leader's death or his forced retirement may forestall decline and collapse.

Formalization → Stagnation → Decline. Not all aging leaders act irresponsibly. They may manage their retreat successfully so that the organization can reach the phase of formalization and stability through consolidation and maturation. The primary threat now is stagnation. All incrementally developing organizations will experience a tendency toward stagnation under normal conditions. Successful organizations can maintain high performance by revolving through the triangle of formalization and stability, stagnation, and entrepreneurial revitalization. As some uncertainty is involved in the process, however, success in maintaining high performance depends to a certain extent on chance factors. Organizations that maintain high performance indefinitely are indefinitely lucky. All others will fail to shift toward revitalization occasionally and decline begins. Cultures of mediocrity develop that justify lower performance and regulate the declining aspiration levels. The quality of management and the work force declines, until low performance becomes the standard.

Decline → Collapse. Decline and collapse are intimately connected, although the borderline of collapse may be hidden to the participants. Decline verges on collapse when the organization has been pushed to the lower limit of acceptable performance. Then, contracting circles are triggered by the competitive disadvantages that the organization suffers. Deviation-counteracting capacity is exhausted to fill the gaps. New vicious circles are created, and chain reactions evolve, until collapse takes place, as illustrated in Figure 11.

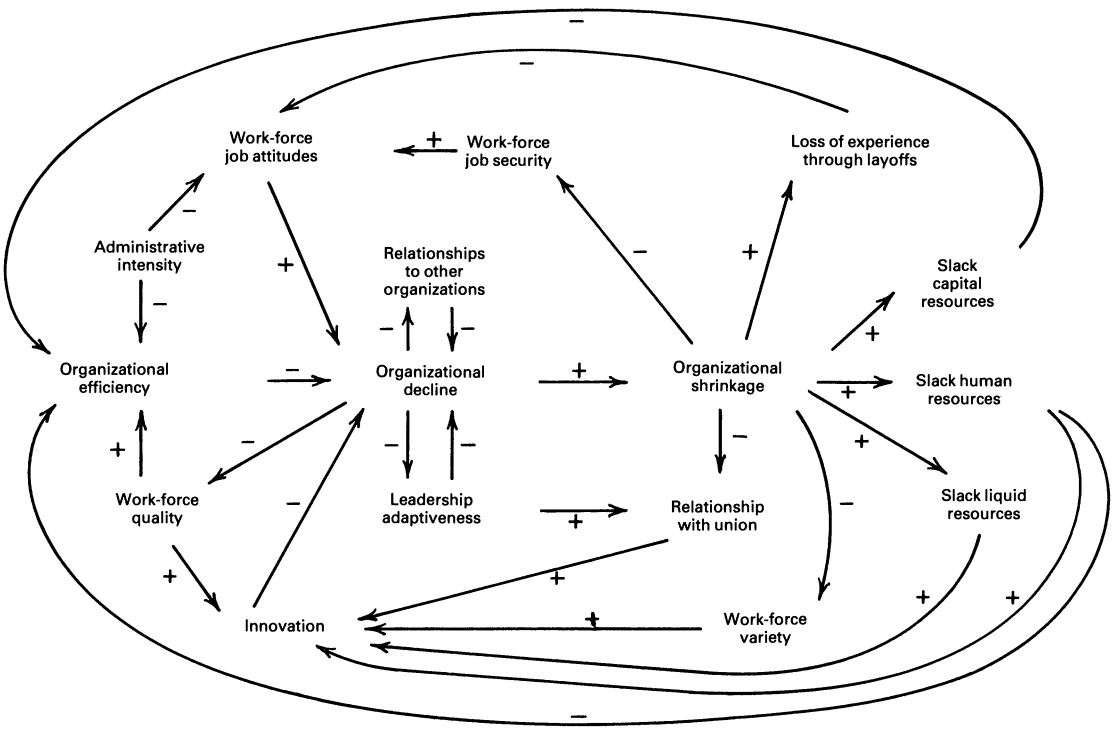

Figure 11. A model of organizational decline. (Adapted from Greenhalgh, 1983, and modified in accordance with him by the author.)

Stagnation → Fragmentation → Decline → Collapse. Another possible reaction to stagnation is fragmentation. The organization's subunits may fight the growing entanglement of stagnation by striving for independence. Fiefdoms evolve. Independence is gained, but synergy from interdependence is lost. Bureaucratic conflicts, thus far mitigated, surface and absorb more energies. Buffers dissolve, and collapse may be triggered incidentally. But this is not the only possible outcome. The gains from independence may exceed the benefits from interdependence. Disintegration may continue, until the old subunits have gained formal independence and the old organization is dissolved.

Decline → Troubleshooting → Collapse. As decline verges on collapse, attempts may be made to turn the organization around. Troubleshooters are hired. If successful, the process resembles the stability-fragmentation-revitalization triangle starting at a low-performance level. But troubleshooting can also hasten the pace of decline if the new management

overacts or commits too many new errors. Then, complexity circles, decision-overload situations, and, eventually, threat-rigidity problems multiply. Collapse becomes imminent.

DISCUSSION AND IMPLICATIONS

Vicious circles are dangerous. They destroy organizations, careers, and people. Yet, they do serve some purpose. First, as the locus of many structural problems in organizations, vicious circles provide a target for organizational improvement. Although it's hard to detect them, it is not impossible. Individuals are intuitively biased against vicious circles, but by being aware of their potential presence, individuals may help to create counterbiases. By approaching organizations counterintuitively, and by routinely checking their circular structures, practitioners can improve upon organizations. Also, efforts can be made to refine knowledge about vicious circles. Up to the present day, the empirical inference of circular structures has been hampered by mathematical problems. The tools to represent formally a network of action loops are simultaneous differential equations. These rarely have general solutions when nonlinearities occur. The common way to avoid the mathematical intricacies is numerical simulation (Forrester, 1961, 1968). So far, however, this technique depends on face validity for model validation. Efforts should be made to develop tools for less intuitive validation methods. Also, more fundamental research is needed to develop models that allow for an inductive inference of the loop structure of a given system. Points of departure are to be found in network theory (Schwartz and Sprinzen, 1984) and especially in topological algebra (Casti, 1979).

Second, vicious circles help to solve the transformation problem — the problem of bridging the gap between individual action and the behavior of organizations or other social systems. There is a twist to the transformation problem which, so far, has hampered its solution: it's not always there. At times, individuals manage to bridge the gap between their own actions and the system's behavior; oftentimes, they don't. Social scientists have largely ignored this fact. Either they claim that social systems are merely a "construction of reality" that can be reduced to (inter)actions on the individual level (Weber, 1947; Berger and Luckmann, 1966), or they insist that social systems reside on their own "emanation level" and have nothing to do with individual action (Lévi-Strauss, 1977; Durkheim, 1982). Both kinds of explanations thus ignore the volatility of the transformation problem. They explain too little or too much. Vicious circles explain just the right amount: Individual actions are transformed into systems by two kinds of loops: deviation-counteracting loops and vicious circles. Only the latter destroy the actor's intention in the transformation process. If the transformation problem arises, vicious circles must be present.

Third, vicious circles are not always present. Not all problems can be solved by detecting and avoiding vicious circles. People may simply expect too much. For a circle to qualify as "vicious," its participants must share frustrated goals. If goals are not shared, that is, if conflict is rational, the behavior of an organization itself is subject to conflicting expectations. What is a vicious circle for one party, then, is a virtuous circle for

another. In a world of scarce resources, many conflicts are rational. Knowing the difference between vicious circles and rational conflicts may help individuals avoid at least one deviation-amplifying loop — the vicious circle of futile efforts.

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