Precis of

Inertia and Transformation

Richard P. Rumelt


In this article I argue that strategy scholars have incorrectly borrowed from economists the assumption of organizational plasticity. Particularly in large firms, inertia, rather than plasticity, is the norm. Unfortunately, there can be no simple theory of inertia as its causes are multiple and varied. After sketching out the shapes of the most important sources of inertia, I turn to the problem of overcoming inertia—the question of organizational transformation. Starting with a simple model of organizational capabilities as existing on two levels (unit-based and rooted in coordination among units), I draw some preliminary conclusions about the shape of organizational transformation.

Introduction

Roughly fifteen years ago the field of business and corporate strategy began to incorporate economic reasoning into its research program. The first step was the adoption of traditional industrial organization economics, with its emphasis on barriers to entry and collusive reductions in rivalry [Porter, 1980]. Subsequently, strategy researchers developed what is now called the resource-based view of the firm.1 This theory sees firms as collections of resources and sees performance differences as largely reflecting differences in resource quality. Whereas traditional industrial organization saw high profits as stemming from collusive reductions in competition or strategies of entry deterrence, the resource-based view sees high profits as the rents accruing to specialized and difficult-to-replicate or non-imitable resources.

1Early contributions were made by Lippman and Rumelt [1982], Teece [1982], Wernerfelt [1984], Rumelt [1984], Porter [1985] (who made the “activity” the central element of his revised view), and Barney [1986]. Reviews of the topic are provided by Connor [1991] and Grant [1991].
Thus, today strategy researchers work with a complex amalgam of economic and quasi-economic reasoning. We envision the firm as striving to maximize value, but also see it as working with factors of production that are far from mobile, as dealing with ambiguous production functions, and as possessing or controlling collections of tacit knowledge and externally held attributions (reputation) that evolve over time in response to investment, activity and imitation.

It is useful to note that this new view has not been developed by "applying" economics to strategy. Rather, it has been accomplished by carefully identifying the assumptions within received economic models that prevented or ruled out strategic phenomena, and by then analyzing the situations created by altered assumptions.

The power behind this research stream has, in large measure, come from the clarity and strength of the theory (neoclassical microeconomics) which it attacks. In fact, the neoclassical model maintained such a grip on the minds of economists that they often spoke of its failures as "market failures," as if it were somehow the responsibility of reality to live up to theory rather than the theorist's responsibility to describe reality.

There are a number of erroneous assumptions that most economically-oriented strategy researchers continue to borrow from economics. At this moment those that are clearest are plasticity, rationality of collective action, and homogeneity of beliefs. I believe that the most important of these is plasticity—the assumption that firms readily respond to exogenous shocks and changes in competitive conditions. The centerpiece of microeconomics is the deduction of autonomous responsiveness (mediated by self-interest) to changes in prices, technology, taxes, etc. Yet the truth is that firms change only with difficulty. Changing strategy and the structural forms and administrative procedures that under-gird strategy is difficult, costly, risky, and time consuming.

I shall call this lack of plasticity inertia. Inertia is the strong persistence of existing form and function. If the form is efficient, inertia is costless and arguably beneficial. However, if the firm's form or practices are inefficient, inertia is a problem. Indeed, the most direct evidence of inertia is the persistence of inefficient forms and practices.²

²One research stream in economics labels persistent inefficiency in the use of inputs as "X-inefficiency," in contrast to the more commonly understood problem of allocative inefficiency. For a survey of this literature as well as empirical estimates of the amount of X-inefficiency see Frantz [1988].
A widely cited example of organizational inertia is General Motors. Once the world leader in automobile production efficiency, General Motors was eclipsed in this regard by leading Japanese manufacturers during the 1970s. Senior management understood the nature of the productivity gap by 1979 yet despite a joint venture with Toyota in which world-class methods were used, the company has been unable to substantially change its overall productivity. In fact, many GM plants became less productive during the 1980s while Chrysler and Ford made broad and significant gains. Clearly, the basic problem facing the senior management of General Motors is not product-market strategy, but organizational change. Their challenge is not really competition, but their company’s own inertia.

The fact of organizational inertia is not simply an "implementation" problem. If firms lack plasticity then the formulation of product-market and corporate strategy is itself fundamentally altered:

- Good product-market strategy must take into account a firm’s inertia and not create new inertia without sufficient reason.
- The important strategy problem facing a firm may well be internal inertia rather than product-market conditions.
- Leaving inertia out of an analysis underestimates, perhaps drastically, the payoff to strategic change and innovation. If competitors are subject to inertia, this analysis is incorrect. Some of the great strategic success stories are due as much to the (temporary) inertia of competitors as to the cleverness of the innovator (e.g., Timex, Federal Express).

A basic question motivating much of the research into the resource-based point of view was "Why are firms different?" The question I suggest requires equal attention is "What are the sources of organizational inertia?" Or, "Why is change so difficult?"

**The Five Frictions**

With a nod to Michael Porter, I have organized the main sources of inertia into five groups, called the five frictions:

- Distorted Perception
- Dulled Motivation
- Failed Creative Response
- Political Deadlocks
- Action Disconnects
In many cases the components of these frictions are well known or easily comprehended. In other cases the issues are novel or subtle. In what follows I shall pass swiftly over many straightforward issues in order to concentrate on those that are novel or complex.

**Distorted Perception**

Change begins with perception. If perception is distorted, then change may be impeded. The fundamental sources of perceptual distortion inducing organizational inertia are: myopia, hubris and denial, and grooved thinking.

**Myopia.** It might be thought that myopia is a perceptual distortion leading to the opposite of inertia—impulsiveness. However, if individual inertia is not intrinsic, but induced by the organization’s context, then it will be expected. And the consequence of expected myopia is disbelief in the statements of others about the long-term and about the results of long-term investments. Hence, senior managers in such a firm may fail to act because they rationally disbelieve the statements of their “myopic” subordinates. The consequence of individual myopia may be organizational inertia.

The simplest source of induced myopia is turnover. If a manager expects to move to another firm in the near future, the weight placed on future profits is diminished. Suppose, for example, that the natural annual discount rate is $r$, that a manager believes the chance of leaving in any given month is constant (i.e., an exponential departure time) and believes the expected time to departure to be $\tau$ years. Then the manager’s effective discount rate for decision-making is $r + 1/\tau$. Thus, the 20 percent annual turnover in managers experienced during the halcyon years of Silicon Valley may have increased the effective discount rates used in decision-making from a normal 15 percent to 35 percent.

**Hubris and Denial.** A serious source of perceptual distortion is denial—the rejection of information that is contrary to what is desired or what is believed to be true. Denial may stem from hubris—overweening pride in past accomplishments—or it may derive from fear.

Hubris is also explainable as *superstitious learning*—learning based on associating past success with factors that were coincidental with it but bear no causal relationship to the success.

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3This analysis assumes no ex-post settling up. That is, when leaving the firm the manager escapes the future negative consequences of myopic decisions.
**Grooved Thinking.** Janus [1972] has described as "groupthink" the restricted thinking that groups impose, punishing or rejecting ideas and information that deviate too much from orthodoxy. A somewhat different perspective is provided by Margolis [1993] who views patterns of thinking as mental habits whose structure and function are the same as physical habits. Finally, a third type of grooved thinking comes from the use of the "wrong" metaphor. Just as policy makers may struggle to decide whether the situation in Bosnia is "another Kuwait" or "another Vietnam," a metaphor, once accepted, provides a powerful restriction on future thought.

**Dulled Motivation**

Even if perception is accurate, organizations may resist change because the need is not felt with sufficient sharpness. The lack of sufficient motivation may be rational, or it may reflect agency or psychological problems. The most important motivational dampers are: direct costs of change, cannibalization costs, and cross-subsidy comforts.

**Direct Costs of Change.** It is likely that change temporarily increases the risk of organizational failure (mortality), disrupts operations, and involves a great deal of expensive effort. Even more importantly, change may imply the abandonment of costly sunk specific investments. If these considerations apply to the firm as a whole, they are rational impediments to change. Applied to individuals or groups, they point to agency problems.

Note that an impediment to change may be rational. When Timex created the disposable watch, there were no imitators for ten years. Some of the inertia was surely wasteful, but some may have been rational. Were a quality Swiss manufacturer to produce disposable watches it would risk damage to its reputation.

**Cannibalization Costs.** When a new product's success eats into the sales and profits of an older product, the older product is said to have been cannibalized. Cannibalization problems may be rational or simply reflect sub-group interests. Rational cannibalization problems occur under conditions of buyer loyalty (or switching costs). Loyal buyers will stay with a firm's old product despite competitors' introductions of new versions, but will switch to the new version when offered by the firm they favor.

**Cross Subsidy Comforts.** The motivation to change is inhibited when a problem business is subsidized by rents from another business. The subsidy may be direct, in the form of management's tolerance of losses in a business that are compensated for by gains elsewhere. Or, it may be indirect, obtained through artificial transfer
prices or through bundling businesses together so that separate measures are not obtained.

**Failed Creative Response**

If perception is acute and motivation sharp, change may still be blocked by other forces. In particular, it may be difficult for the organization to choose a direction out of its difficulties. The impediment may be in the analysis of the situation or in choice itself. The major categories of friction in this area are: speed and complexity, reactive mind-set, and inadequate strategic vision.

*Speed and Complexity.* Analysis is blocked or frozen when things happen too fast. If a competitor can go around the "Boyd loop" of observation, orientation, decision, and action faster than an opponent, the opponent may not simply struggle along, he may freeze-up or collapse. The "Boyd loop" phenomena is one form of what is known to everyone as "having the initiative" in a game.

When the decision situation is very complex, there may also be a similar blockage. For example, U.S. firms all dropped out of the liquid crystal flat-screen technology race when Japanese firms jumped too far ahead. The pace of events overtook their resource allocation systems and the complexity of the judgments to be made exacerbated the situation.

*Reactive Mind-Set.* Change is inhibited when people adhere to the view that their problems are natural and inevitable. The most common reactive mind-sets are that the industry is "mature" that the problems are industry problems and not the fault of the firm. These points of view have great validity behind them—the weight of expert advice and analysis. They are also self-fulfilling. If all competitors define their market as mature they will surely be correct.

*Inadequate Strategic Vision.* Even when analysis and choice have not been blocked, the direction chosen and especially its articulation may be so flawed that change is blocked. Vision (direction) also may be inadequate because it is hypocritical. Hypocritical vision is dishonest, claiming values and goals that are known to be false. Announcing "We are a community . . ." is a lie for a firm that is about to lay off one-third of its workforce. Managers know when goals of "quality" or of being "ecologically sound" are hypocritical and cannot help but treat the rest of the vision with cynicism.

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Political Deadlocks

Political deadlocks lead to inertia by tying up time and energy in wrangling. Change in organizations of any size involves more than just commanding change. The commitment and endorsement of powerful figures must be obtained if change is to effectively move forward. That difficulties must be expected is oldest political wisdom. As Machiavelli [1961, p. 51] pointed out,

It should be borne in mind that there is nothing more difficult to arrange, more doubtful of success, and more dangerous to carry through than initiating changes in a state’s constitution. The innovator makes enemies of all those who prospered under the old order, and only lukewarm support is forthcoming from those who would prosper under the new. Their support is lukewarm partly from fear of their adversaries, who have the existing laws on their side, and partly because men are incredulous, never really trusting new things unless they have tested them by experience.

Departmental Politics. This is one of the most obvious sources of inertia and little more need be said. Managers rarely act to unseat themselves or to terminate their own departments.

Incommensurable Beliefs. More interesting than the politics of self interest is the problem that arises when different individuals or groups hold sincere but differing beliefs about the nature of the problem or its solution. Figure 1 illustrates the classic Condorcet paradox. Here three managers face three alternatives (downsize, merge, and R&D), and each ranks the three differently. The problem here is that the group’s preferences are intransitive. If any of the three alternatives is taken to be the status-quo, there is always an alternative preferred to it by a 2-to-1 majority. Here "R&D" beats "downsize," "merge" beats "R&D," and "downsize" beats "merge." There is no stable resting place among the cyclic preference mix.

This sort of problem in aggregating individual preferences led Arrow [1963] to his Impossibility Theorem and has inspired a stream of related work. It all points to the fact that traditional concepts of "public interest" or the "organization's goals" are empty of rigorous meaning unless there is uniformity of opinion.

What happens when these managers are asked to reach a "consensus?" Modern political theory establishes that here (and in general) there is no "rational" outcome, and that any of the outcomes can be
obtained by manipulation of the agenda.\textsuperscript{5} My belief is that there are
four basic patterns that can emerge. First, a leader may simply impose a decision, eliminating the illusion of group choice. Secondly, the choice process may cycle for some time without generating an outcome. Thirdly, the managers may recognize the "irrationality" of the situation and withdraw from participation (essentially colluding to avoid choice). Finally, other considerations or "games" may change the relative influence the managers have, resolving the paradox.

When managers disagree, there is no "rational" way to combine their beliefs. If speed is important, leadership may have to abandon group decision processes. When process is important, and beliefs differ, inertia may well be the outcome.

\textit{Vested Values.} The third source of political deadlock is the presence of vested values. Unlike the cases of differing interests or beliefs, here individuals and departments are taken to have strong emotional or value attachments to products, policies, or ways of doing things. These vested values and interests can easily be the greatest impediments to change.

Vested values lie at the heart of institutions. The defenders of vested values are usually the informal leadership network—the defenders of the society and of its norms. The paradox of change is that these same people, perhaps the best and the brightest, easily become the source of inertia. The problem of vested values is not with simple foot dragging, but with the organizational equivalent of patriotism.

\textbf{Action Disconnects}

The fifth source of friction concerns those forces which prevent action. Even if perception has been sound, analysis and choice have proceeded, and the problems of politics overcome, there may still be no change. The basic reasons for action blockades and disconnects are: leadership inaction, embedded routines, collective action problems, and capabilities gaps.

\textit{Leadership Inaction.} For change to begin, the leadership must articulate a vision for change, must alter incentives, must take direct action where possible, and must shift power. If it fails to do these things, change will be inhibited. The need for direct action is perhaps worth emphasizing. The concept of leadership comes from the military notion of being "in front," of providing courage and energy by example. In business, the analog is for the senior management group to

\textsuperscript{5}The McKelvey [1976] \textit{Chaos Theorem} established that absent a clearly dominant policy, a group using majority-rule voting can be led to \textit{any} outcome by a sufficiently clever manipulation of the agenda.
lead by example. If a new emphasis on service is the centerpiece of
the strategy, and the marketing manager keeps on an old friend, the
head of market research, despite a wide reputation for providing bad
service to the product groups, there has been a failure of leadership
by example.

Major change requires a leader to repudiate prior commitments,
thus lessening his or her ability to lead in the future. Hence, en-
trenched leadership is normally a source of inertia.

*Embedded Routines.* The life functions of a business are its proc-
esses—its ways of doing things. Complex processes possess great in-
ertia. The knowledge of how certain steps are performed may be tacit,
no one may have a complete understanding of the process, and
changing one aspect of a process may have significant unanticipated
consequences on other parts of the organization. Finally, the various
routines that make up the process take on the force of habit. From a
purely economics perspective, organizational change only requires a
change in incentives. However, the habitual patterns of work have an
inertial force that can be much stronger than any practical incentives.

*Collective Action Problems.* Action can be blocked by a variety of
collective action problems. The simplest is the first mover problem: if
senior management has called for new initiatives, does it pay to be a
first-mover? In many situations the incentives are clearly in favor of
waiting to see how the first mover does. In such cases, the equilib-
rium is for no one to move at all. There are also analogous problems
of free-riders that inhibit change even when first-movers have led the
way.

The more complex collective action problem is that best described
as *cultural.*[^6] A dysfunctional culture may block change and itself be
virtually impervious to alteration. Consider, for example, the simple
question of cooperation (coordination) versus competition among de-
partments. As a step towards a model, suppose that individuals in an
organization meet in pairs and must each decide whether to cooperate
\((C)\) or compete \((X)\). Each individual has information that the other
do not and each controls some resources that the other does not.
Cooperation means trying to act for the good of the company as a
whole. In particular, it means making claims on the other person’s
resources that are justified by one’s private information and accepting
the other person’s claims on one’s own resources as valid. Competi-
tion means trying to act (covertly) for the good of the local unit. Con-
cessions from the other are sought that will benefit one’s own unit.

[^6]: For a good discussion of the fundamental concept, see Ouchi and Wilkins [1985]. For a technical view of the behavioral preconditions to social exchange, see Elster [1989].
To make the game more concrete, example payoffs are shown in Figure 2. The net payoffs to each player are symmetric and are simply weighted averages of the local and corporate payoffs. Figure 3 shows that if enough weight is placed on corporate payoffs, the equilibrium in the simple single-meeting game is C. If local payoffs dominate, the equilibrium is X. At intermediate levels of weighting, there are two pure-strategy equilibria: C and X. That is, there are two possible cultures and theory has little more to say about which will exist.

Suppose a firm had, over time, developed a culture having equilibrium X. How might management move it to C? If a charismatic leader were able to convince the group that it was truly at C, then the equilibrium would indeed change. Another strategy is to break off a small unit of the organization and focus resources and attention on changing its culture. Then, the old organization can be slowly recombined with the new culture in such a way as to preserve the new rather than overwhelm it with the old. A third strategy would be to merge with a firm having culture C and hope that the combination tilts in the right direction.

Because culture depends on mutual expectations, it is not easily changed. A culture that resists change or that does not fit the direction the firm needs to take can be an insurmountable source of inertia.

Capabilities Gaps. The final action blockade is simply a gap or disconnect between the tasks that need to be performed and the competencies and capabilities within the firm. Hamel and Prahalad [1990] have introduced the term "stretch" for the sense of tension between reality and aspiration, and have argued that healthy organizations are in a constant state of stretch. But too great a gap is discouraging and is more likely to inhibit than induce change.

The Process of Transformation

Transformation is the process of engendering a fundamental change in an organization leading to a dramatic improvement in performance. The fundamental change may involve strategic redirection, but always includes structural change and a dramatic alteration in the behavior of individuals. Transformation always involves overcoming large amounts of organizational inertia.

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7Assume incentives are not sufficient and complete monitoring is not feasible.

8In this case one should play C if one believes that at least 60 percent of the others are playing C.
In certain exceptional cases inertia is greatly reduced by the existence of an already proven major invention or strategic innovation. Thus, for example, Intel’s shift away from being a “memory chip” company was greatly facilitated by the fact that its microprocessor business was profitable and growing rapidly. Top management had only to coordinate the re-allocation of resources from the old to the new business [Burgelman, 1991].

Absent an innovation in hand, transformation contexts can be usefully divided into those in which operating efficiency is primary and those in which the adroit utilization or reallocation of resources is primary. Figure 4 is a guide to these contexts. The horizontal axis (capability) measures the relative efficiency of the firm at performing its tasks. The vertical axis (fit) measures the adequacy of those tasks in meeting product-market demands. The ideal firm is both capable and fit (adapted).

Corresponding to these two change contexts are two transformation tasks: recovery and renewal. Put simply, recovery is the process of regaining lost (relative) efficiency whereas renewal is the process of developing new skills and resources or of discovering new uses for extant skills and resources.

Modeling the Architecture of Organizational Competence

In order to discuss the specifics of transformation it is necessary to have a view as to the structure of a firm’s competencies. The general viewpoint adopted here is that competencies are hierarchical in structure and exist in layers, the existence of a higher layer being dependent upon competent execution of lower layers.

An analogy to human skills may be helpful. Consider the performance of a helicopter pilot. The most fundamental skills (layer 1) are visual (sharpness, field of view, depth perception, etc.), basic motor coordination, and kinesthetic sense. Given layer 1 skills, the beginning pilot can learn specific tasks—taking off, landing, level flight, hovering, turning, and so on; call these layer 2 skills. Given layer 2 skills, the pilot begins to integrate them into a fully coordinated competence at flying, where lower-level routines are called on unconsciously as needed and smoothly integrated. A layer 3 competent pilot will still need to work to accomplish layer 4—flying in close formation with other helicopters. Clearly, layer 3 skills must be considerable and automatically available if layer 4 is to be attained. And the hierarchy continues—formation flying in bad weather, under combat conditions, etc.

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\[9\]In Vietnam U.S. pilots flew formations so tight that the rotors overlapped.
Returning to the firm, one could obviously define skills in layer 1 as being basic manufacturing operations, selling activities, etc. Layer 2 might then be defined as the coordination of these skills into a coherent business. Layer 3 would then be the coordination among related businesses and layer 4 the adaptation of this pattern to local conditions throughout the world.

Whatever the complexity of reality in particular situations, the basic arguments I wish to advance can be made with a simple two-layer model. The model has the following characteristics:

1. Coordination skills can only be developed when underlying primary task skills are routinized.

2. Coordination skills are specialized to the tasks and methods used by individual departments.

3. Individual departmental performance is measurable with much less error than individual contributions to coordinative activity. Department performance can be measured, compared across departments, benchmarked with comparable departments in other firms, and subjected to causal analyses. The overall effectiveness of coordination can be measured (with error), but it is extremely difficult to assess the contributions of individual departments to the whole.

4. Coordination is costly to departments. It is work and it results in some degree of despecialization.

With regard to element 4, it is worth emphasizing that coordination is not costly just because it is work, but also because it interferes with routine. The most fundamental economic proposition about organization is the existence of gains to specialization. If there are gains to specialization, it means that it is most efficient for a department to concentrate on one task rather than spread its efforts among two or more tasks. So, to the extent that there are gains to specialization, there must be concomitant costs to coordination due to the despecialization it requires.\(^{10}\)

To make more precise the idea that departmental work and coordinative work compete for a department manager's time and energy, the following conjecture is offered:

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\(^{10}\)For example, coordinating manufacturing to customer needs may mean interrupting production runs, using more set-ups, and increasing the variety of materials that must be carried in inventory. Of course it still may be optimal to bear these costs due to the extra value obtained through coordination.
**Proposition 1**  Increases (decreases) in departmental incentive intensity reduce (increase) coordinative activity.

Appendix A provides a demonstration of this proposition in a simple setting.

The negative relationship between incentive intensity and coordinative activity is illustrated in Figure 5. As the requirement for coordination rises, the intensity of department incentives must be reduced. Conversely, reductions in the requirement for coordination permit increases in local department incentives. As the requirements for coordination drop below some critical level, say $C_0$, organizational governance is replaced by market governance and arms-length transactions take place.

Note particularly that it is common for transaction cost analysts to see the reduction in incentive intensity accompanying internalization as an unavoidable cost to internalization. That is, with a full market interface between a buyer $A$ and a supplier $B$, the supplier $A$ has high powered incentives to produce efficiently. However, when $A$ and $B$ are departments within a single firm, incentives are unavoidably dulled. As Kreps [1990, p. 756] notes,

If $A$ buys out $B$’s assets and employs $B$, then $A$ is unable to match such strong incentives in the employment contract she gives to $B$. She has a difficult time monitoring the effort $B$ expends, and she has an especially difficult time seeing how $B$ expends whatever effort he does expend.

What is different in the analysis presented here is that it has firms existing to provide an escape from the high-powered incentives of the marketplace. Within the firm, where incentive intensity can be reduced by design, it is possible to generate more and richer coordinative activity than can be accomplished in markets. Thus, in contrast to transaction-cost theory, it is the gains to greater coordination that rationalize the firm.

**Observation 1**  Fragmentation and increased incentive intensity act to reduce each of the first four sources of inertia.

Fragmentation means cutting the company into smaller departments, reducing interdependencies, measuring each department’s performance and tying managerial pay and career potential to results. Fragmentation eliminates cross-subsidy comforts. It breaks political coalitions, asserts the center’s legitimate authority over behavior, and compels attention to performance rather than discussion. It reduces the inertia of embedded (coordinative) processes by reducing their importance or by literally tearing them out. Fragmentation
breaks the larger culture into smaller cultures, and cooperative behavior is more likely to emerge in smaller groups. Vested values are not strongly affected by fragmentation because it acts on behavior and attention rather than values or beliefs. Finally, fragmentation helps reveal the loci of department competencies, triggering key decisions on readjustments in the portfolio of departments and redesign of the overall strategy.

**Observation 2**  *Transformation always involves an initial reduction in the amount of coordination among departments.*

If the transformation task is renewal, new departmental tasks must be defined and new methods discovered. The competence model implies that changes in departmental methods imply replacing the present coordinative regime with a new one. This, in turn, implies that coordination will first be reduced, as the old system is scrapped and departments drive to adopt new methods.

If the transformation task is recovery, the need is to identify and remedy poor methods and waste. The practical approach to this issue involves some fragmentation, clearer measures, and increased incentive intensity. The focus on department performance will produce a reduction in coordinative activity (Proposition 1).

**Observation 3**  *The initial stages of transformation will be accompanied by increased incentive intensity.*

This simply follows the necessity to motivate departmental action during the first stages of either renewal or recovery.

Transformation cannot, however, consist simply of fragmentation and increased incentive intensity. Business effectiveness also requires the close and subtle coordination among departments. But our model suggests that there is a necessary sequence of action in transformation. From the competence model we know that department coordination cannot be built or developed until department tasks are smoothly operating. Hence:

**Observation 4**  *Rebuilding coordination among the departments must await task redefinition, the adjustment of methods, the elimination of waste, and the routinization of new work standards.*

**Observation 5**  *Rebuilding coordination among the departments requires a reduction in incentive intensity.*

**The Transformation Path**

According to the analysis just completed, the most direct way of reducing organizational inertia is to exploit the reduction in organizational cohesiveness that accompanies the first phases of transforma-
tion. In addition, the analysis points to a predictable sequence of events in organizational transformation. In the first phase, not directly discussed, managers within the firm become aware of the need for change and begin to formulate views as to appropriate new directions. In the second phase, top management imposes structural fragmentation and increased incentive intensity. These moves have the effect of reducing coordinative activity, breaking some of the inertias that have impeded action, and focusing departmental attention on improving methods and eliminating waste. Once departmental performance has been improved, attention should turn to rebuilding coordinative activity. To accomplish this, the incentive intensity must be reduced, else departments will have little reason to invest in difficult-to-measure coordinative efforts. As coordination increases, best practices and other fruits of the central phase can be spread throughout the firm. A simple map of this transformation path is provided in Figure 6.

**Conclusions**

If firms are not easily changed, there are important implications for strategy. The overwhelming evidence is that organizations possess considerable inertia, yet strategy content models, including the resource-based view of the firm, tend to sidestep this issue. A complete "strategic theory of the firm" must deal squarely with the issue of inertia.

Whereas the resource-based theory of the firm has had the advantage of using as a foil a clear model of the firm, there is no clear simple model of management or organizational process. Hence the study of inertia and transformation is complex and requires looking into a variety of disciplines.

In this article I have offered a numbers of ideas and conjectures garnered from economics, organizational sociology, cognitive psychology, political science, and general common sense. They have led to the elucidation of the five key frictions that impede change, a hierarchical view of the architecture of organizational competence, and a set of predictions about the time sequence of transformation phases.
### Figure 1

Condorcet Preferences

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<tr>
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<th>Manager</th>
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<tr>
<td></td>
<td>John</td>
</tr>
<tr>
<td>Downsize</td>
<td>1</td>
</tr>
<tr>
<td>Merge</td>
<td>2</td>
</tr>
<tr>
<td>R&amp;D</td>
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Figure 2

Payoffs in Cooperate vs. Compete Game

Local

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<tr>
<td>2.0</td>
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<td>2.0</td>
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<td>3.0</td>
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<td>-2.0</td>
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Net Payoffs

Net = A*Local + (1-A)*Corporate

A = 0.5

Corporate

<table>
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<td>3.0</td>
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<td>-0.5</td>
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</table>
Figure 3

Equilibria vs. Payoff Weighting

Weight on corporate payoffs
Figure 4
Change Contexts

Fit

Capability

GM

Recovery

Renewal

Northrup
Figure 5

Coordinative Activity versus Incentive Intensity
Figure 5

Coordinative Activity versus Incentive Intensity
Appendix A

Incentive Intensity and Coordination

In the discussion of competence architecture and transformation sequences, Conjecture 1 was offered, positing a negative relationship between incentive intensity (the strength of departmental performance incentives) and inter-department coordination. Looking closely at such an issue requires a dip into some agency theory. To accomplish this a modified version of Milgrom and Holmstrom’s [1990] linear model will be analyzed. The modification is the introduction of multiple agents and payments based on team production.

A Linear Agency Formulation

Milgrom and Holmstrom [1990] build a principle-agent model in which the agent makes a choice of how much effort (or time) to spend on a number of tasks. The simplifications they introduce to permit analysis are linear wage rules, constant absolute risk aversion of the agent, independent normally distributed errors in measurement, and signals whose expected values are linear in the agent’s effort. The model here is based upon theirs but adds the element of team production.

The agent’s effort is divided between two tasks, with effort $t_1$ spent on the first and $t_2$ on the second. There are $n$ agents and the principal observes each of their type-1 efforts individually with additive error $\varepsilon_1$, which is normally distributed with zero mean and variance $\sigma_1^2$. However, the principal can only observe the total type-2 effort $\tau$ put forward by all agents, again with additive error $\varepsilon_2$ distributed normally with mean zero and variance $\sigma_2^2$. All errors are independent.

The agent’s wage is

$$w = \alpha_1(t_1 + \varepsilon_1) + \alpha_2(t_2 + \varepsilon_2) / n + \beta$$

Thus $\alpha_1$ is the payment rate for local effort and $\alpha_2$ is the payment rate for the average collective effort. The agent has constant absolute risk aversion $r$ (that is, a utility function of the form $u(w) = -e^{-rw}$). The agent’s personal cost of effort is $C(t_1, t_2)$, which is convex. With these specifications, the agent’s certainty equivalent is

$$CE = \alpha_1 t_1 + \alpha_2 \tau / n - (r / 2)[\alpha_1^2 \sigma_1^2 + \alpha_2^2 \sigma_2^2] - C + \beta$$

In solving the agent’s maximization problem the question arises as to the value of $dt_1 / dt_2$. If the agents are purely non-cooperative, then $dt_1 / dt_2 = 1$ whereas fully cooperative behavior would imply $dt_1 / dt_2 = n$. Assume that each agent possesses some zeal and increases his or her
output by the fraction $\lambda$ of the average increase in output per agent that can be attributed to others. Then
\[
\frac{d\tau}{dt} = 1 + \lambda \frac{n-1}{n} \frac{d\tau}{dt}
\]
so that
\[
\frac{d\tau}{dt} = \frac{n}{\lambda + n(1-\lambda)}
\] (3)

For simplicity define $k = \lambda + n(1-\lambda)$. When $\lambda = 0$ we have the non-cooperative solution ($k = n$) and when $\lambda = 1$ we have the fully cooperative solution ($k = 1$).

Let $C_i = \partial C / \partial t_i$. Then the agent’s maximization problem is solved (as long as $t_i > 0$) by setting
\[
C_i = \alpha_i
\] (4)
and
\[
kC_i = \alpha_i.
\] (5)

Define $C_y = \partial^2 C / \partial t_i \partial t_j$ and take partial derivatives of (4) and (5) to give
\[
\partial \alpha_i / \partial t_i = C_{ii}
\]
and
\[
\partial \alpha_i / \partial t_i = kC_{i2}.
\]

Using the Inverse Function Theorem we have
\[
\begin{pmatrix}
\partial t_1 / \partial \alpha_1 & \partial t_1 / \partial \alpha_2 \\
\partial t_2 / \partial \alpha_1 & \partial t_2 / \partial \alpha_2
\end{pmatrix} =
\begin{pmatrix}
C_{22} & -C_{12} / k \\
-C_{12} & C_{11} / k
\end{pmatrix}
/ [C_{11}C_{22} - C_{12}^2] .
\] (6)

The expected state of affairs is for $C_y > 0$. That is, more effort on some task should make additional effort on it or some other task even more costly. In addition, we expect $\partial t_1 / \partial \alpha_i > 0$ and $\partial t_2 / \partial \alpha_2 > 0$ because a larger incentive placed on task $i$ should call forth more effort on task $i$. Consequently, the denominator of the right-hand matrix must be positive in a well-behaved specification. The sought-after result is thus immediate: $\partial t_2 / \partial \alpha_1 < 0$. Increased local incentive intensity ($\alpha_i$) reduces effort devoted towards coordination ($t_i$). It can also be observed that this connection does not depend upon the level of cooperation ($k$).
References


