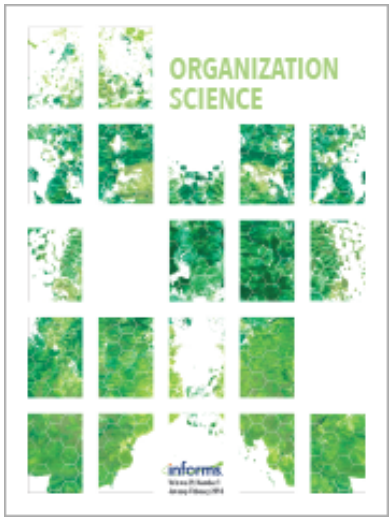

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Temporal Work in Strategy Making

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This paper reports on a field study of strategy making in one organization facing an industry crisis. In a comparison of five strategy projects, we observed that organizational participants struggled with competing interpretations of what might emerge in the future, what was currently at stake, and even what had happened in the past. We develop a model of *temporal work* in strategy making that articulates how actors resolved differences and linked their interpretations of the past, present, and future so as to construct a strategic account that enabled concrete strategic choice and action. We found that settling on a particular account required it to be coherent, plausible, and acceptable; otherwise, breakdowns resulted. Such breakdowns could impede progress, but they could also be generative in provoking a search for new interpretations and possibilities for action. The more intensely actors engaged in temporal work, the more likely the strategies departed from the status quo. Our model suggests that strategy cannot be understood as the product of more or less accurate forecasting without considering the multiple interpretations of present concerns and historical trajectories that help to constitute those forecasts. Projections of the future are always entangled with views of the past and present, and temporal work is the means by which actors construct and reconstruct the connections among them. These insights into the mechanisms of strategy making help explain the practices and conditions that produce organizational inertia and change.

Key words: temporal work; strategy as practice; practice lens; cognition; sensemaking; interpretation; provisional settlements; breakdowns
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Introduction

A fundamental challenge for managers making strategy is coping with an uncertain future. In studying strategic change, scholars have emphasized the importance of sensemaking as a collective and often conflictual interpretive process for dealing with uncertainties about the business, the market, and the environment. Such uncertainties lead to breakdowns in understandings and require cognitive reorientations to move forward (Balogun and Johnson 2004, Gioia and Chittipeddi 1991, Gioia et al. 1994, Kaplan 2008b, Maitlis and Sonenshein 2010, Rouleau 2005). These studies suggest that linking across interpretations of the past, present, and future makes action possible but have left unexplained how and why some linkages work and some fail in practice, and, for those that do work, why some lead to the status quo and others produce change.

Our study of strategy making in practice offers some answers to these questions. We found that managers—through a set of practices that we call "temporal work"—come to settle on particular strategic accounts that link interpretations of the past, present, and future in ways that appear coherent, plausible, and acceptable. Such temporal work involves negotiating and resolving tensions among different understandings of what has happened in the past, what is at stake in the present, and what might emerge in the future. Settling on a strategic account, even if provisional, allows actors to shift from disagreeing or deliberating about meanings to implementing strategic choices, thus enabling the organization to move forward in the face of uncertainty. If a settlement breaks down, further temporal work is required to reconstruct a new strategic account that more coherently, plausibly, or appropriately connects interpretations of the past, present, and future. The more intensely actors engage in temporal work, the more likely that the strategic accounts will facilitate organizational actions that depart from the status quo.

Our model was developed through a grounded inquiry into the daily practices of managers making strategy at CommCorp,[1] a large communications equipment manufacturer, during a period of particularly high uncertainty—the bursting of the Internet "bubble" in 2002. This major dislocation increased uncertainty about the future of the fiber-optic technologies that had driven growth in the industry (and the firm) over the previous decade and raised serious doubts about the best route forward. Organizational participants regularly spoke of the "many paths to the future," with different actors producing different projections of what could take place. Interestingly, they also differed in their views of the issues currently at stake as well as the meaning and significance of past actions. None of these multiple, differing views of the past, present, and future provided

a clear guide to strategic action. Indeed, many were in conflict with each other, with some visions of the future diverging dramatically from established accounts of the past and particular understandings of present concerns precluding certain futures and favoring others.

Adopting a practice lens (Feldman 2003, Feldman and Orlikowski 2011, Orlikowski 2000), we examined CommCorp's strategy-making dynamics as they were produced in the course of everyday organizational action. By seeing what strategists do in their daily work through a "sociological eye" (Whittington 2006, p. 1577; see also Jarzabkowski et al. 2007, Jarzabkowski and Kaplan 2010, Orlikowski 2010), we found that organizational participants at CommCorp struggled on a daily basis to reconcile different views of the past, present, and future. Specifically, in our in-depth analysis of five strategy projects at CommCorp, we found that actors could not enact new visions for the future without constructing strategic accounts that articulated how such futures connected meaningfully to a history of the company and to current internal and external pressures. This process invariably comprised not only reimagining the future but rethinking the past and reconsidering present concerns—practices that we have labeled temporal work.

Our inductively derived model contributes to the management literature by showing when and why interpretations of the past, present, and future cohere into useful strategic accounts and explains why some accounts lead to change and others reinforce the status quo. In doing so, we foreground an interpretative understanding of time, building from the foundations of sensemaking in retrospection and incorporating prospective, creative imaginings of the future into an understanding for how actors construct useful lines of action. Furthermore, by showing how interpretations of the past, present, and future shape strategic choices and action, we gain analytical traction in explaining how managers make strategy in practice under conditions of uncertainty. Our model suggests that strategy cannot be understood as the product of more or less accurate forecasting without considering the multiple interpretations of present concerns and historical trajectories that help to constitute those forecasts. People's projections of the future are always entangled with their views of the past and the present, and temporal work is the means by which they construct and reconstruct the strategic accounts that link them together. These insights into the mechanisms of strategy making can help explain the practices and conditions that produce organizational inertia and change.

Foundations for Understanding Temporal Work in Strategy Making

The work on sensemaking has powerfully argued that actors are always making interpretive links in time, looking back to understand the present through retrospective sensemaking and imagining paths that will have been taken to reach projected futures through "future perfect thinking" (Weick 1979, p. 46). Yet the literature in strategic management that has built on sensemaking has focused more on the ways in which individual sensemaking leads to shared cognitions and, in particular, how such views are "given" or justified to others (Balogun and Johnson 2004, Gioia and Chittipeddi 1991, Gioia et al. 1994, Kaplan 2008b, Maitlis and Sonenshein 2010, Rouleau 2005). Less attention has been directed to the question of how interpretations of the past, present, and future are constructed and linked together in more or less radical ways. This gap has been noted recently by scholars who have suggested that an interpretive view of time might be useful in understanding organizational strategy making (Gioia et al. 2002, Suddaby et al. 2010, Tsoukas and Shepherd 2004). For example, the idea of future perfect thinking remains underdeveloped (Gioia et al. 2002), meriting only a few pages in Weick's (1979, 1995) seminal works, and is rarely taken up empirically (see Pitsis et al. 2003 for an exception).

We thus sought theoretical handholds that might help us understand the dynamic interplay among interpretations of the past, present, and future. One such handhold was Emirbayer and Mische's (1998, p. 963) theory of human agency, which suggests that human action is a "temporally embedded process of social engagement, informed by the past (in its habitual aspect), but also oriented toward the future (as a capacity to imagine alternative possibilities) and toward the present (as a capacity to contextualize past habits and future projects within the contingencies of the moment)." From this perspective, the future is not a set of outcomes that can be forecast more or less accurately or that will be revealed over time. Instead, the future is manifest in the multiple imaginings of what might be possible. Similarly, the past is not a set of events or experiences to be determined through analysis, nor is the present evident in a clear set of pressing issues. Instead, the past influences action based on the ways actors reconstruct histories out of their different prior experiences, and the present directs attention through actors' multiple assessments of current concerns (Emirbayer and Mische 1998). Said differently, the path from perceived uncertainties in the environment to responses by the organization is littered with multiple interpretations of what has happened, what is currently at stake, and what might be possible.

The field of organizational studies has a well-established literature on time (e.g., Ancona 1990, Barkema et al. 2002), focusing on different forms of time (Clark 1985, Zerubavel 1981), temporal coordination or structuring (Bluedorn 2002, Orlikowski and Yates 2002), the sequencing of events over time (Helfat and Raubitschek 2000, Ramaprasad and Stone 1992), and the pacing or entrainment of activities (Ancona and Chong 1996, Gersick 1989, Perlow et al. 2002). Theories of

the temporal embeddedness of agency, however, point us toward understanding not just the form, flow, or structuring of time, but also how multiple interpretations of the past, present, and future shape outcomes.

Sensemaking emphasizes retrospective reconstruction, where actors look to the *past* to rationalize their actions (Weick et al. 2005) and, in doing so, give meaning to those events. The objective "past" sequence of events is distinct from the subjective "history" that represents actors' efforts to generate meaning from those events (Suddaby et al. 2010). Although people may agree that certain events have taken place in the past, their meaning and significance remain up for grabs. Actors pick and choose (and assign meaning to) those events to create a "useful line of action" (Flaherty and Fine 2001, p. 152). As such, choices about action are always mediated by actors' interpretations of history. Research on organizational identity argues that these views of the past serve as "perceptual lenses" for interpreting current issues and making future strategies (Gioia and Thomas 1996, p. 372). By corollary, actors can "resee" the past (Strauss 1969, p. 67) to realign it with their understandings of changing present concerns or newly imagined futures.

In the Weickian sensemaking perspective, even the *future* is understood retrospectively through "future perfect thinking." Theories of the temporal embeddedness of agency suggest that projections of the future are not necessarily retrospective in nature, though some future visions may trigger reconstructions of history. Recently, scholars have advocated for a "post-Weickian" approach that would focus on this projective, prospective aspect of sensemaking (Gephart et al. 2010, Wiebe 2010), where the future is shaped in practice—in the "now"—as it is interpreted and enacted. Such a view of sensemaking echoes observations such as Mead's (1932, p. 76), that we "construct our pasts in anticipation of [an imagined] future" (see also Mische 2009). The past does not determine the future, but rather (visions of) the future can be seen to shape (views of) the past (Flaherty and Fine 2001).

In seeing the *present* as interpreted, we make the distinction between the empirical reality of the fleeting moment (the "now" in which contemporaneous action takes place) and the interpretation of current concerns. Our interest is in the latter, placing interpretations of the present on the same footing as those of the past and future (Emirbayer and Mische 1998). Here, theories of the temporal embeddedness of agency can usefully link to empirical work in the managerial cognition literature that has shown the effect on strategic choices and actions of, for example, variation in managers' views of environmental changes as posing threats or opportunities (Gilbert 2006, Jackson and Dutton 1988, Milliken 1990), identification of some firms and not others as competitors (Porac et al. 1989, Sutcliffe and Huber 1998), and understanding technical changes as being more or less radical (Garud and Rappa 1994, Kaplan 2008a, Tripsas and Gavetti 2000). Any determination of what is currently at stake will thus embody varied views about which present concerns should inform the course of action.

Even though theories of the temporal embeddedness of agency offer a useful analytical lens for investigating strategy making in organizations, some conceptual gaps remain. First, although the theories suggest that the development of plausible connections among interpretations of the past, present, and future is necessary for action (Emirbayer and Mische 1998, Gioia et al. 2002, Suddaby et al. 2010), they do not specify how these links are made in practice. Second, it is unclear how differences and conflicts across multiple interpretations of the past, present, and future are negotiated and resolved. Mische (2009) noted that these gaps exist in part because of the difficulty in studying projective action. Our study of strategy making addresses this challenge by focusing on a setting in which future projections are coin of the realm. Indeed, our fieldwork revealed that forward movement in the organization required that interpretations across the past, present, and future had to fit together; that is, a new view of the future could not take hold unless it was woven into a coherent, plausible, and acceptable strategic account that articulated how such a future could emerge from a particular understanding of the past and a specific assessment of present concerns. As a result, struggles to imagine the future also involved struggles to make new sense of the past and the present.

Research Setting and Methods

Our research insights emerged from a grounded theory approach (Dougherty 2002, Glaser and Strauss 1967) based on an open-ended and inductive research design that was informed by a broad interest in strategy making during periods of uncertainty. Taking a practice lens on strategy guided us to focus on the everyday activities of managers making strategy in situ, much as Orlikowski (1992, 2000), Barley (1986), Bechky (2003), and others have done in the context of understanding technology in organizations. A practice lens recognizes that practice is a central locus of organizing, and it is through situated and recurrent activities that organizational consequences are produced and become reinforced or changed over time (Feldman and Orlikowski 2011). Everyday activity becomes the object of analysis. Such a focus requires deep engagement in the field, observing and interacting with practitioners in action. As a result, we chose to study strategy-making activities within a single organization (CommCorp). To obtain granularity of operational detail as well as variation for analytical comparisons (Bechky 2011), we used an embedded case design (Yin 1984) to track the unfolding of five technology strategy projects within CommCorp, each of which represented varied strategic responses to the collapse of the

telecommunications market. Our interest was to understand strategy making as experienced by the organizational participants themselves.

Iterating among in-depth analysis of each case, comparisons across cases, and connections to the literature (Dougherty 2002, Eisenhardt 1989, Vaughan 2009), we paid attention to surprises and puzzles that led us to further analysis and theorizing (Agar 1986). Although the research design was aimed initially at understanding the practices of strategy making during periods of uncertainty, the emerging salience of multiple interpretations of the past, present, and future led us to draw on theories of sensemaking (e.g., Weick et al. 2005) and temporal embeddedness (e.g., Emirbayer and Mische 1998, Flaherty and Fine 2001) to analyze the data. Although useful, these theories could not entirely explain the dynamics we observed. So we moved to another stage of grounded theorizing to elaborate what we came to identify as temporal work and its role in the making of strategy. Consistent with inductive research approaches, our primary research questions—How do managers negotiate and resolve differences in interpretations of the past, present, and future to make strategy? And, specifically, why do some interpretative linkages work and some fail?—emerged over time, as we engaged iteratively with evidence from the field and extant research that helped us make sense of what we had found.

Research Setting

Our research was situated within the Advanced Technologies Group (ATG) of CommCorp, a multidivisional communications equipment manufacturer and prominent player in the telecommunications industry. CommCorp is broadly representative of large incumbent firms in its industry. We concentrated on ATG because we were interested in understanding strategy making, and this was the group responsible for developing the technology strategy for the corporation. We focused specifically on ATG's responses to the 2002 crash in the optical technologies (also known as "photonics") market. The emergence and rapid proliferation of optical technologies was tightly tied to the boom in the telecommunications industry in the late 1990s. The subsequent bust in the early 2000s resulted in slower sales, significant layoffs, and budget cutting throughout the industry, including at CommCorp, which had been one of the leading producers of optical technologies. Despite this crisis, optical technologies continued to change rapidly, generating a great deal of uncertainty about the future and provoking ATG managers to rethink the technology strategies the organization was pursuing. This setting constitutes an extreme case (Yin 1984) that was particularly useful for our research question because changes in strategic direction were required, and actors' struggles to make sense of the past, present, and future were particularly evident.

ATG had two key decision-making bodies, the Review Board, made up of the senior team and charged with approving specific strategies, and the Steering Committee, largely made up of technical personnel and charged with guiding the formation and development of strategy projects. We chose the strategy project as the unit of observation, which allowed us to observe the actors and activities producing strategy as projects unfolded, rather than prejudging which actors, technologies, and events might be central (Czarniawska 2004). After a series of orienting interviews, we selected for in-depth analysis five projects (described in Table 1) that were at an early stage (so that we could follow them over time) and in technology areas deemed critical to the corporation. Each project included cross-functional teams with members drawn from the engineering, network architecture, marketing, and economic analysis groups. These projects were strategic because they would affect the competitive position and future viability of the firm. They were chosen to accentuate differences that afforded a comparative analysis: involving divergent views of the future, requiring distinct kinds of technologies, and being led by different people.

Over the course of our study, it became apparent that each project came to embody different visions of the future that represented greater or lesser degrees of change from the status quo. To understand these differences, we examined our participants' views of the strategies as they evolved in their projects over time. Iterating between open coding and a review of the literature, we found that these projects varied along dimensions of innovation identified by technology management researchers (e.g., Utterback 1994)—the technology, the customer or market, and the business model. Table 1 details these analyses for the five projects, along with a summary of the degree of change (radical, incremental, or mixed) based on how each innovation dimension was characterized by participants. Note that the degree of change was only assessed ex post, after the nature of each project became evident through the strategy-making process.

One project (Module) came to represent an incremental change from existing approaches, becoming mainly a line extension of products used to accelerate the delivery of content over the network with some important changes in the business model. At the other extreme, the Savior and Lightwave strategy projects came to embody more radical changes. Savior comprised completely new technologies for a new set of customers (shifting from carriers to enterprises) and proposed new business models to deal with the convergence of networking and computing. The Lightwave strategy was radical in another sense: the strategic choices ultimately taken here involved shutting down one of the most central activities of ATG, the development of a new photonic switch. This choice would move CommCorp

Table 1 Five Projects at CommCorp

Project	Key participants	Summary of degree of change	Degree of change from specific types of business activities (ex post view)			Strategic choice and action
			Technology	Customer/market	Business model	
Lightwave	Brad Copeland (head of ATG) George Arden (Marketing) Hugh Collins (Engineering) Jack Stafford (Engineering) Susannah Watts (Economic Analysis) Chris Chang (Economic Analysis)	Radical[a]	*Radical* Closing down most central activity of ATG "The decision was hard because it was the first time anyone in CommCorp had cut back on photonics investment. They had made cuts in other areas, but optical had been relatively untouched."	*Radical* Move away from offering products to carriers for the core of the network "The challenge is going to be, what are the technology projects to support an optical infrastructure for what the market and the industry *is* now versus what the market and the industry *was*."	*Radical* Move away from the "big box" model of selling complex, customized technology, and from a technology push approach to development "Cutting the program was difficult because Lightwave project leaders were from the old school of 'give me a pot of money and let me go.' "	Decision to reduce budget for next-generation switch technology by 50% and then later to close the project down
Last Mile	Albert Lee (Marketing) Brad Copeland (head of ATG) Hermann Meier (Engineering) Hugh Collins (Engineering) Susannah Watts (Economic Analysis) Terrence Smith (Marketing) Theresa Veneto (Architecture)	Mixed	*Incremental* Using optical technologies previously under development (e.g., OpAccess) They are "basically taking work that had been patented in 1995 and tweaking it." "The technologies include existing and '*x* factor' technologies that won't come out for a few years."	*Moderate* New product area (access rather than the core) but to be sold to existing customers (the carriers) "It is a planned market extension for existing business products" (and eventually, for only one line of business).	*Radical* Move from low-volume, customized products to high-volume, low-cost products "This company has always been bad at access. Our economic model seemed to be a very sophisticated system of high cost, high price, high margin, and limited production runs. Access requires a different mind-set."	Initial funding for major new business in access technology but eventual decision to focus on development for a single business unit
Multiservice	Edward Fischer (Engineering) Erik Helgesen (Engineering) George Arden (Marketing) Jack Stafford (Engineering) Theresa Veneto (Architecture) Tom Rentham (Marketing)	Mixed	*Moderate* Requires development of new algorithms while using existing technology platforms. Some applications are within existing products; others are extensions. Would require carriers to reconfigure parts of networks. "It fits both evolutionary and radical."	*Moderate* New service to existing customers "Carriers want to provide converged services [legacy and new services], and Multiservice is the key bridge tech because it allows interoperability." However, "your customers will not initially accept the new technology. You have to evolve to it."	*Incremental* Mainly traditional approach, though may involve cannibalizing some existing businesses Some business units find Multiservice to be "threatening and cannibalizing of their existing products" because it would obsolete "value-added switching services."	Initial decision not to fund "bridging" technology because of a lack of business case but later substantial investment based on a specific customer request for a trial

Table 1 (cont'd)

Project	Key participants	Summary of degree of change	Degree of change from specific types of business activities (ex post view)			Strategic choice and action
			Technology	Customer/market	Business model	
Module	Erik Helgesen (Engineering) Stephen Merton (Engineering) Vijay Kumar (Engineering) Vince Weston (Business Development)	Incremental	*Incremental* Extension of existing technology "We tried to see what new applications could be enabled from [business unit's] tech. We proposed a radical change in architecture, but that would take a major development effort. In the end, we went with a quicker option."	*Incremental* Adding services to those already offered to current customer "It is really the [business unit *x*] value proposition repackaged, not a breakthrough business strategy."	*Moderate* New "pay as you grow" model, charging for software in addition to hardware "Customers would have to pay more for a software license to enable advanced levels. This pricing would be at a premium, and so the launch of Module would be a strategic risk."	Decision to add resources to develop technology for a customer application (later decision to merge with Savior to expand footprint and avoid commoditization)
Savior	Brad Copeland (head of ATG) George Arden (Marketing) Grant Quinn (Engineering) Rick Huff (Engineering) Vijay Kumar (Engineering) Vince Weston (Business Development)	Radical	*Radical* Radically new technologies on a new platform "This is a revolutionary technology." "Convergence of networking and computing could be very threatening to CommCorp [as] business will just slowly be eroded. Savior is a Hail Mary, save-the-company idea."	*Radical* Focus on enterprise customers rather than the traditional carrier customer "I felt it was necessary to take a contrary more strategic view…the intent is to be ready for the market window in 2–3 years.…This will be the enterprise market.…Savior is a road map to get more into the enterprise market."	*Moderate/radical* New business models required as networking and computing industries converge "We need to move up the value chain fast, and we need to change fast. What if all that crap we were spouting in 2000 comes true in 2005? The new rules pretty much screw us. So business models will change."	Decision to add resources to explore new strategic direction focused on convergence of networking and computing (later merge with Module to scope out a next-generation technology)

[a]The Lightwave project was ongoing at the time of the study and was situated at the core of ATG activities. However, the strategic choice we studied was about whether or not to shut down the project. Such a shutdown would cause a break from existing activities and is therefore considered to be quite a "radical" change from existing ways of doing business.

away from its traditional product market—selling equipment for the core of the network to telecommunications carriers—and alter its "big box" model of selling complex, customized technologies to a few large customers. In contrast, the Last Mile and Multiservice projects came to involve mixed amounts of change, incremental shifts on some dimensions and more substantial or even radical moves on others. The technology proposed for the Last Mile strategy for increasing bandwidth at the edge of the network involved "tweaking" earlier technologies and selling them to existing customers (the carriers). The product market, however, was new, and the economic model for producing high-volume, standardized products differed dramatically from the traditional big box approach. The Multiservice project to develop a bridge technology between legacy and new optical systems ended up proposing a strategy that fit within the existing business model, but both the technology and product markets were relatively new. Table 1 also details the strategic choices that emerged as participants in CommCorp settled on each one of these strategies.

During the course of our analysis, we considered whether patterns in the temporal work of the individuals and groups involved in each project could explain differences in the degree of change from the status quo evident in the strategy each produced. This emerging question—again consistent with inductive theorizing—became an additional research question that guided subsequent analysis.

Data Collection

Our data collection and analysis conformed to standards of rigor for field studies (Gibbert and Ruigrok 2010, Strauss and Corbin 1998). We relied heavily on ethnographic techniques (Agar 1986, Van Maanen 1988), collecting observations of everyday activities as well as conducting formal and informal interviews and gathering documentary data. The goal was to get close to the daily practices of strategy making by examining what actors did, both individually and collectively, to produce strategic choices and actions. The data (summarized in Table 2) were collected over eight months by the first author, from April to December 2002. This fieldwork yielded multiple overlapping sources of data for each of the five projects, including observing daily project activities at various CommCorp locations; observing 34 formal meetings (from two hours to two days long); conducting 91 interviews across hierarchical levels and functions; participating in frequent informal communications, teleconferences, and email exchanges; and collecting documentation for each project (e.g., spreadsheets, presentations, emails, agendas, and minutes of meetings).

After the first round of orienting interviews, the remaining interviews were informal, open ended, and unstructured. They conformed to ethnographic practice (Spradley 1979), taking place alongside daily observations of the five projects as the project work proceeded. They were conducted with all key project participants at multiple levels of the organization as well as members of the ATG senior team. These interviews were a means to track progress, make sense of the interests and assumptions held by different actors, explore team dynamics, understand evolving interpretations, and identify strategic alternatives being proposed. Nearly all interviews were recorded and transcribed, and as is the usual practice, detailed notes were written up within a day.

The observations covered a range of scheduled team meetings related to each of the projects as well as all of the meetings of the official decision-making groups (the senior management Review Board and the Technology Steering Committee). In addition, the on-site fieldwork captured individual work activities and informal encounters that took place by chance (e.g., as people passed each other in the hallway). Because the members of ATG were widely dispersed geographically, many project activities took place via teleconference and email, in which the first author regularly participated. Thus, being "in the field" involved not only in-person but also daily electronic observations, which were equally important at CommCorp, as in other high-tech contexts where virtual communications predominate (Hine 2000).

Data Analysis

We began analysis during the fieldwork: field notes of observations and interviews included a section on emerging themes that were summarized and analyzed in weekly memos. After the fieldwork ended, we used the field notes, transcripts, and documentary materials to construct case summaries and chronologies for each of the five projects covering the conditions, events, and activities entailed in developing the various strategies that each project settled on over time.

The analytical process was highly iterative, involving several rounds of coding and frequent reference to the literature as different themes emerged (Figure A.1 in the appendix depicts the phases of analysis we followed). The development of the chronologies revealed the ongoing struggles of participants as they attempted to project the future under conditions of considerable uncertainty. We noted in particular the tensions that emerged when evolving ideas about the future clashed with understandings of the organization's past history or assumptions about current priorities. As we iterated with the literature, we sought theoretical approaches to structure our analysis. Theories of the temporal embeddedness of agency (Emirbayer and Mische 1998, Flaherty and Fine 2001) that articulate an interpretive view of the past, present, and future were particularly valuable. In a first round, we drew on these theories to focus coding on specific temporal interpretations as they emerged in the

Table 2 Description of Data Sources by Project

Project	Number of project-specific participants (interviews/ meetings)[a]	Formal interviews[a]	Formal team meetings observed[a]	Steering Committee and Review Board meetings observed[a]	Observations of daily project activities	Documents and spreadsheets	Email exchanges among team members
Lightwave	12/15	22	0	3	Limited (only in conjunction with other projects)	From all major decision meetings	Selected (those forwarded by three team members)
Last Mile	20/24	55	4	4	Extensive (several times per week)	From nearly all formal and informal working documents	Extensive (most team communications)
Multiservice	15/23	23	2	2	Periodic (a few times per month)	From all major decision meetings, selected other working documents	Limited (only in connection with formal decision meetings)
Module	10/23	15	10	6	Periodic (a few times per month)	From all major decision meetings, selected other working documents	Selected (mainly those covering Savior as well)
Savior	8/14	23	19	2	Extensive (several times per week)	From nearly all formal and informal working documents	Nearly all
Total number[b]	24 interviewed/ 24 others in meetings	91[c]	24	10[d]	Many	Many	Many

[a]Values represent the number of times projects were covered in these interviews/meetings.
[b]Totals are lower than the sum across projects because interviews and meetings often covered multiple projects.
[c]Nine interviews covered subjects other than the five projects studied (e.g., general strategy-making processes).
[d]One Steering Committee covered general decision-making processes and not any specific projects.

project work at CommCorp. We found substantial evidence for the importance of actors' interpretations of the past, present, and future, and we further found that these temporal interpretations were both overlapping and interdependent.

So, in a second round of coding, we turned to an open-ended, inductive coding scheme that allowed us to analyze temporal interpretations from the ground up. We searched for patterns in how CommCorp actors produced and coped with multiple temporal interpretations by comparing across projects to discern differences in practices and examining how and why these produced certain outcomes. We found that actors engaged in what we term "temporal work" by reimagining the future, rethinking the past, and reconsidering the present to negotiate their interpretive differences. Such activity led them to settle on strategic accounts that wove together a set of understandings of the past, present, and future.

We observed that these settlements were not always achieved, and when achieved, were often temporary. We also found many incidents of interpretive breakdowns. This led us to further review the literature, seeking insight into what characterized and triggered breakdowns and settlements. We found interesting connections with research on elite settlements (Armstrong 2005, Burton and Higley 1987), provisional settlements (Girard and Stark 2002), genre stabilization (Schryer 1993, Yates and Orlikowski 2007), and practical breakdowns (Agar 1986, Suchman 1987, Winograd and Flores 1986). A third round of axial coding (Strauss and Corbin 1998) fleshed out the characteristics and enablers of these dynamics. It is through this process that our key constructs emerged.

Comparing across practices and outcomes, we found that projects differed in their degree of departure from the status quo, and through a fourth round of coding, we associated these differences with the intensity of temporal work in each project. In a fifth round of coding, we assessed the intensity of the temporal work based on the frequency with which it was evident in the project chronologies, and then we categorized each project as comprising limited, some, or substantial engagement in these activities over time. From this approach, we discerned how actors' temporal work to produce settlements generated different kinds of strategies that entailed varying degrees of organizational continuity and change. We explore these dynamics below.

Strategy Making in Practice

As evident in our initial fieldwork, the crisis in the market had challenged CommCorp managers' confidence to anticipate the future. Erik Helgesen, the director of engineering and development, acknowledged, "Who today in this marketplace has accurate data? I mean nobody, literally nobody. It is very hard. You have a gazillion points

right now where, you know, everybody—economists, analysts, companies—fails to forecast accurately. . . . So forecasting is very difficult, or you can say impossible, because [of the] dramatic change." More information gathering and analysis were not necessarily the answer because, as George Arden, a marketing manager, noted, "[T]here's a gap. You can describe the application and some of today's technologies, but there isn't information on the future." And, according to Albert Lee, another marketing manager, reliance on past trends and experience seemed equally problematic:

> I like to think my crystal ball is pretty good. I think I am pretty perceptive. I subscribe to probably 25–30 magazines. I'm on the Web every day. I probably study three hours a day. And that is on top of a decade of experience in the different product groups and customers and the rest of it. But having said all that, I did not predict the huge crash that was going to come and the way the industry is just being completely turned over. No one did. Because of what has happened in the market, we now have a crisis of confidence about looking into the future.

Yet ATG was still compelled to act. The future of the corporation depended on the group's ability to plot a course out of the crisis through new technology strategies. Simply reacting to the emergent realities was not possible, because choices about how to respond depended on visions of how the future might unfold. Thus, to make strategic decisions, CommCorp managers had to develop specific perspectives on the future that would be sufficiently robust—or, as Schryer (1993, p. 208) put it, "stabilized-enough"—to allow the organization to move forward in the face of uncertainty.

Interpreting the Past, Present, and Future

Analysis across the five CommCorp projects indicates that multiple and varied interpretations of the future were in play. For example, the first and most critical debate was about whether the downturn in the market would be a "blip" in a broad trend of growth in optics or part of a permanent course correction. This had implications in the Lightwave project, where views about the size of the future "addressable market" for optical switches varied from multiple billions of dollars to only millions. Connected to this were debates about the possibility for new "killer apps" that would drive significant increases in demand for bandwidth. Few could identify what those killer apps might be: some felt that at least one was bound to emerge, whereas other participants were more cautious. Without a sense of such potential applications, it was difficult to conceive of a viable strategy to invest in optical technologies for the core of the network. Similarly, it was hard to envision that a strategy for improved access technologies would be fruitful (an approach proposed in the context of the Last Mile project) if no killer apps emerged to absorb demand.

Furthermore, it was not just the uncertain and unknowable future that was variably interpreted. The meanings of the past and the present were also up for grabs. When managers at CommCorp looked to the past, it was not simply to draw on or learn from it, as if it were a stable series of uncontroversial facts. Instead, they constructed many different historical accounts, each of which offered disparate lessons and had distinctive implications for which future strategies could be pursued. For example, CommCorp had traditionally pursued a "technology push" strategy in which engineering dominated and the job of marketing was to sell "cool technologies." However, some managers had begun to reevaluate this history, arguing that it had led CommCorp to its current difficult position. Whereas many saw CommCorp as having focused consistently on technologies for the core (backbone) of the optical network, others argued that CommCorp's real history was in serving a broad set of communication needs (as indicated by its name, "Communications Corporation"). CommCorp had primarily sold products to the carriers (service providers such as Verizon or Bell South), but considerable debate emerged about whether this represented a deliberate choice not to serve other customers such as enterprises or whether the narrow focus was simply the result of habit.

Similarly, varying interpretations of current concerns were evident, and these shaped the kinds of problems and priorities that people thought the different strategies would address: Should our goal be to continue to lead in optics? Should we focus on meeting immediate business unit needs? Should we continue to focus on the core network or on new technologies to alleviate the glut in the core? Should we stay focused on the needs of carriers or shift our attention to new customer sets?

Constructing Strategic Accounts Linking Interpretations of the Past, Present, and Future

The past, present, and future were thus all interpreted in the CommCorp strategy-making process, and these interpretations were multiple, interdependent, and sometimes conflicting. A particular view of the future shaped and was shaped by certain understandings of history and present priorities. Envisioning new futures provoked reassessments of the past and present just as new understandings of current concerns triggered new imaginings of the future and alternative versions of history. Negotiating these interpretive differences proved to be central to strategy making in practice. We refer to this activity as *temporal work* and found that it involved reimagining future possibilities, rethinking past routines, reconsidering present concerns, and reconstructing strategic accounts that linked these interpretations together.

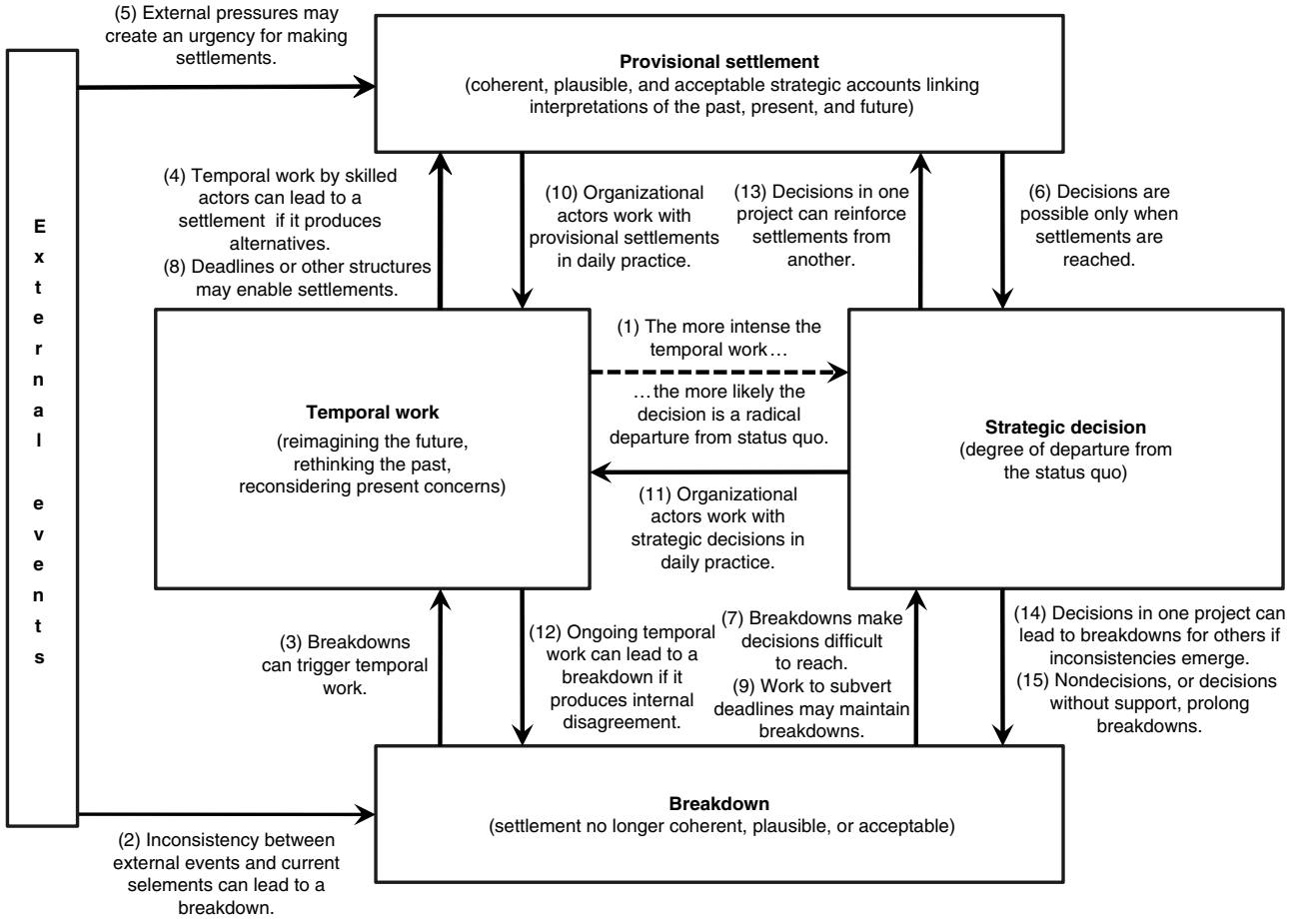
Our grounded analysis of the five projects at CommCorp allowed us to further ask how and why some strategic accounts work and some fail in practice, and for

those that do work, why some lead to status quo outcomes and others lead to change. Our model of temporal work in strategy making (presented in Figure 1) offers a set of answers to these questions, which we summarize here and discuss in detail in the sections below. At the highest level, we find that actors' strategy making in practice entails iterating among breakdowns in understandings of the past, present, and future, temporal work to reconstruct such interpretations, and provisional settlements on particular strategic accounts that connect the past, present, and future and that over time produce strategic decisions.

A central relationship we identify is that between the intensity of temporal work engaged in by organizational participants and the degree of departure from the status quo evident in the strategy that emerges from their activities (Figure 1, arrow (1)). This relationship emerges from a set of practices that are mapped out in the remaining arrows in the figure. Our analysis shows that decisions are only reached to the extent that differences in interpretations of the past, present, and future can be resolved and provisionally settled. One explanation of the findings would indicate a sequential process model where breakdowns in understandings—triggered perhaps by changes in the environment (Figure 1, arrow (2))—provoke temporal work (arrow (3)) to reimagine the future, rethink the past, and reconsider present concerns. If this work is done by skilled actors who produce alternative interpretations (arrow (4)), or if pressures from the environment create urgency (arrow (5)), it can lead to alternative settlements. Those strategic accounts that fit logically together (are coherent); match organizational, technological, and market contingencies (are plausible); and are seen to reduce conflict (are acceptable) create a context in which participants can make decisions (arrow (6)). Such settlements are sufficiently stable to enable actors to converge on strategic choices and actions that move the organization forward in the face of uncertainty.

However, our findings, as elaborated below, suggest that more complex and recursive relationships are at work here. First, although breakdowns may ultimately lead to new settlements and new strategic decisions, they make decisions difficult to reach in the short run (Figure 1, arrow (7)). When temporal work fails to produce coherence, plausibility, or acceptability, the resulting breakdowns compel actors to continue seeking alternative connections among interpretations until they can

Figure 1 A Model of Temporal Work in Strategy Making



settle on a strategic account that would enable the organization to move forward. Without a settlement, actors have little basis upon which to make a decision. Internal deadlines or procedures that compel a decision may force actors to reach a settlement (arrow (8)), but actors can subvert these deadlines if they want to avoid a settlement that is unacceptable (arrow (9)). Second, because settlements are typically provisional, they require further interpretations as actors act on these understandings in their daily practice (arrow (10)). Or, the implementation of decisions leads to further temporal work as the implications of the decisions are clarified (arrow (11)). Actors do this to make sense of the settlements and to translate them into specific choices and actions, but sometimes this ongoing temporal work highlights internal inconsistencies or disagreements, which produce new breakdowns (arrow (12)).

Just as breakdowns can foster temporal work, temporal work can lead to breakdowns. And although strategic decisions can reinforce particular settlements by providing legitimacy and further resources to develop strategies consistent with those understandings (arrow (13)), such decisions can also lead to breakdowns in other projects if they generate inconsistencies (arrow (14)). If decisions are not reached (nondecisions), breakdowns will be prolonged (arrow (15)). Breakdowns can intensify temporal work, and the more intensely this is engaged in, the more likely that new strategies will depart from the status quo (returning to arrow (1)).

Each of the projects we studied followed different paths through the process depicted in Figure 1. Some iterated repeatedly among temporal work, breakdowns, and thwarted decisions. Others reached decisions quickly because settlements were easier to achieve. In some cases, one project's provisional settlements and decisions triggered breakdowns in other projects. We next consider the various elements of the model and then articulate, with process maps, the different paths taken by each project.

Unpacking the Model of Temporal Work in Strategy Making

As our model suggests, explaining how participants came to make strategic choices requires understanding how multiple temporal interpretations were woven into strategic accounts and how conflicts among them were resolved to produce coherent, plausible, and acceptable settlements.

Doing Temporal Work

In the five projects we studied, strategy-making activities entailed interdependences among their interpretations of the past, present, and future. Actors' efforts to imagine alternative futures were deeply implicated in understandings of past trajectories and present contingencies, and reassessments of the company's history reflected awareness of current conditions and shaped views of future possibilities. Table 3 depicts the three kinds of temporal work we found in the projects at CommCorp: reimagining the future, rethinking the past, and reconsidering present concerns. The final column of the table reprises the categorization of outcomes (from Table 1): participants' ex post assessment of how much change each project represented. We found a consistent relationship between the intensity of temporal work engaged in by actors and project outcomes: the more intensely actors engaged in temporal work, the more their projects' strategies departed from the status quo.

Reimagining the Future. The ability to project alternative futures depended on the way actors connected these futures to their understandings of the past and the present. The past often weighed heavily on these efforts. For example, when attempting to envision the future of the Module project, George Arden, a marketing manager, struggled because he could only think of futures that were consistent with past trends. He obtained data from industry analysts on sales and technical trends for related product areas, but he did not know how to apply these to a new domain. He felt that he was just "reinventing the wheel."

Other actors searched for analogies that would help them rethink the future by evaluating what elements of the past might pertain to it. For example, team meetings on the Savior project were often composed of interchanges among Vince Weston (a business manager), Grant Quinn (a network engineer), and Vijay Kumar (a director in the engineering group) about what an effective analogy might be: If they were to pursue convergence of networking and computing, what might that technology look like?

> [*In an early meeting*] **Vince:** Basically, you would become the backdoor Akamai.
>
> **Grant:** I was thinking more like you would be the local MasterCard, the one that collects all the money, the statistics, the billing information.
>
> [*Later in the meeting*] **Vijay:** It is like a service exchange; the value is not in the specific service but in the overall ability to change services within the rack.
>
> [*In a subsequent meeting*] **Vijay:** Savior is [CommCorp product x] duct taped to [start-up z] duct taped to [start-up w] duct taped to [product y].
>
> **Vince:** The idea is to be the Dell of services. We don't want to build, just package them.
>
> [*Later in the meeting*] **Vince:** Dell doesn't do any R&D.
>
> **Vijay:** They don't have a freakin' patent. It would be interesting if we could become the Intel to all of the little tiny Dells and Microsofts. Or would we become the Dell? Partially Dell and partially Intel.
>
> [*In a subsequent meeting*] **Vince:** So CommCorp becomes the Motorola for the service switches. But, instead of Motorola, the value is in the packaging and the "secret sauce." We are the Motorola for service switches.
>
> **Vijay:** We can become an integrator like they are.

Table 3 Temporal Work in Five Projects at CommCorp

Project	Reimagining the future	Rethinking the past	Reconsidering present concerns	Departure from status quo[a]
Lightwave	*Substantial* Initially, Lightwave continued to be defined as the "way of the future," but eventually, "we realized that everything got right shifted a few years. We were peaking our effort too early." Focus on putting program in cryostasis, defining what cryostasis meant, and identifying other projects.	*Substantial* Long period of lock-in with past approaches, but eventual recognition of market changes leads to contested reassessment of "addressable market" to "small fraction" of 2001 estimate. Break from "an old school of 'give me a pot of money and let me go.' "	*Substantial* Competing concerns about achieving short-term revenue goals during the crisis while supporting longer time frames of technology development. Found that Lightwave was "way out of whack with the corporation. There was a lot of dissension. It took months of trying to prove the business cases."	Radical
Last Mile	*Limited* Future projections constrained by past trends: "We weren't being visionary or entrepreneurial. The marketing people simply said that for the foreseeable future there will only be a need for 100 kb usage per line and therefore there is no market. . . ." Proposed solutions were based in previously developed OpAccess technology, though some concerned that "[w]e need to make sure we don't steer near the wake."	*Some–Substantial* Debate over Lightwave project induces new thinking about how to build out the optical network. Move away from traditional focus on the core of the network. Challengers attempt to discredit project as stuck in past approaches: " 'Build it and they will come and pay' has completely failed as a business case—services must be economically viable."	*Substantial* Worries that this is another "optical playground": "It should not be backdoor entry into access. . . . This is just to support the rest of the business. We need access to access." Debate about the market needed for optical access technologies. Many "still don't see a killer app, it's a copper-based world for now, no backhoes, capex is tight."	Mixed
Multiservice	*Some* Different views of the future lead to different conclusions. Either carriers are "capital constrained" and cannot make investments or Multiservice is a way out of capital constraints by "bridging" to new features: "We have a broad knowledge about what is happening in the industry and the way this technology could help. The question is how to get people to move beyond their mind blocks. . . ." Brainstorming sessions about future customer needs, but little change in concept of project.	*Limited* Continue standard approaches. Emerging recognition of change in the future of optics has little impact on view of technology. Team seen as being locked into "bubble mind-set."	*Some–Substantial* Debates about which concern should prevail: technology viability, customer readiness, or business unit support: "No business unit is saying, 'Give it to me now', so the question is, if there is no immediate pull, do we shelve it? It won't be a black-and-white decision."	Mixed
Module	*Limited* Mainly focus on immediate "wish list" of customers and business unit. Only later, when merged with Savior, a bolder vision anchored by view of current concerns emerges: "We need to put a stake in the ground and start telling people that the market opportunity is based on real-world proof points."	*Limited–Some* All discussions occur within the current framework for doing business. Over time, increasing debate about extensions of Module. Is Module still too much in the old model? "Can't just do a faster Module or one with more protocols."	*Limited* Focused on satisfying needs as articulated by the business units. Only develop ideas for which there is BU support. Some worries about project implications: "Unless something more is done with Module, [the server companies] will commoditize the blade."	*Incremental*

These interactions attempted to make sense of the strategic potential of an essentially ambiguous technology by looking to the past. The analogies allowed actors to develop a list of services that a Savior program might offer, some of which they considered "table stakes" for playing in the market and others closer to "outright lunacy" in their boldness. Settling on one of these analogies gave them direction for how they might proceed.

Table 3 (cont'd)

Project	Reimagining the future	Rethinking the past	Reconsidering present concerns	Departure from status quo[a]
Savior	*Substantial* Rethink CommCorp's role in the network, from "Level 0–1" to "convergence" between networking and computing. Continual discussion to define Savior: data center virtualization vs. computing virtualization, a "concept car" or regular product development. Constant trading of analogies. Multiple meetings to develop a list of potential services. Creation of documents analyzing each: "It now has 15 of them altogether, ranging from table stakes to outright lunacy."	*Substantial* Brad realizes optics are moribund and radical new strategies are required. Recognition that solutions will look very different from past approaches. CommCorp needs "out of the box, out of CommCorp" thinking. Project is "hard for CommCorp because we typically give away software to sell more boxes. It is a different economic model."	*Substantial* Worry that "this project steps on everybody's toes at CommCorp. They would have to change plans across the board." "Flip-flopping" about project: "A tug-of-war on wanting to be entrepreneurial and CommCorp's resource limits."	Radical

[a]From Table 1.

But future imaginings were also conditioned by present concerns. Few alternative possibilities were considered in the Module project because team members were primarily concerned with responding to current business unit (BU) and customer "wish lists" and "real-world proof points." In the Last Mile project, marketing team members did not want to predicate a whole strategy on "unknown disruptions" that might radically change the demand for access technologies. They felt constrained in their ability to "do a 'what-if' scenario" by the horizon mandated by the decision-making bodies.

> The focus of what we were asked to do was the zero- to three-year time frame. It was not beyond three years. So if people are not talking about it as a technology now, it is not going to get implemented in three years. If we are talking about the 10-year horizon, then yes, there are certainly other things in terms of being able to look at the bigger picture. (Susannah Watts, manager, Economic Analysis)

Although the potential existed to see the world in new ways through creative recombinations and the use of analogies, actors often experienced limits on such possibilities if they could not rethink established views of the past or effectively challenge beliefs about present concerns.

Rethinking the Past. The ability to project more boldly into the future was connected to the degree to which people were able to reinterpret the past. The crash in the market for optics forced everyone at CommCorp to reevaluate the company's historical strategic trajectory. This questioning ultimately led to the shutdown of the Lightwave project that had been focused on developing new switching technologies for the regional or "metro" markets as an extension of the company's focus on the core of the network. And it enabled Hugh Collins to propose the Last Mile project for access technologies as an alternative to this past focus on the core. It was also through this process that Brad Copeland (the head of ATG) realized that continuing the pursuit of optical technologies was dangerous and began to push Vince Weston to do some "out of the box, out of CommCorp" thinking. This led Vince to put together the Savior project to pursue convergence of networking and computing (potentially through software solutions). But he recognized that such a vision of the future would be "hard for CommCorp because we typically give away software to sell more boxes. It is a different economic model." They thus had to reconsider CommCorp's history to imagine radical visions of the future. A breakthrough came when Vince linked his bold vision of Savior to a portrayal of CommCorp's history as a company that developed transformational technologies rather than the more widely held image of CommCorp as an optical technology company.

On the other hand, the Module and Multiservice projects involved less intensive efforts to break with the past. The Multiservice team continued with the "technology push" development approaches that had dominated at ATG. The change in the future of the optics market had little impact on the team's view of how to proceed, and many outside the project saw the team as being locked into the "[Internet] bubble mind-set." Similarly, discussions on the Module project initially occurred within the established framework for doing business. It was only when they began to worry that Module was sticking too close to existing approaches that they decided to merge with the Savior project to embrace a bolder strategy. They had come to realize the risks of sticking with the past trajectory: "[W]e can't just do a faster Module or one with more protocols."

Reconsidering Present Concerns. The ability to generate more radical strategies depended also on the degree to

which actors deliberated the problems and priorities they felt the organization should be addressing in the present. Views of what was currently at stake sometimes conflicted with participants' projections of the future. In the Lightwave project, participants struggled to reconcile the short-term pressures they felt from the market with their beliefs in the long-term potential of optics. In the Last Mile project, because of concerns about carriers' inability to launch major capital projects to dig trenches for installing fiber optics to the home, they eventually settled on a "no backhoes," "copper-based" view of present requirements. This, however, reined in any efforts to imagine radical futures for access technologies. Theresa Veneto, head of the Steering Committee, worried about a similar risk in the Multiservice project. Many opponents to the project insisted that current business unit needs should be the primary concern for the ATG group, but Theresa wondered if they should just "shelve it" because no business unit was willing to sponsor the project. "It won't be a black-and-white decision," she said.

The degree of deliberation about present concerns varied. Some projects, such as Module, were fairly anchored in satisfying what were seen to be a stable set of needs (in this case, those demanded by a single business unit). Other projects, such as Savior, involved intensive "flip-flopping" about which priorities were most important. Inspired by the potential for convergence between networking and computing, Vince (the Savior project leader) was eager to get CommCorp to move in this direction. On the other hand, he worried that convergence "steps on everybody's toes at CommCorp," requiring them "to change plans across the board." He described this tension as "a tug-of-war [between] wanting to be entrepreneurial and CommCorp's resource limits." The more the participants reconsidered present concerns, the greater the tensions that arose. However, it was through such interactions that new connections among the past, present, and future were built.

Coping with Breakdowns and Accomplishing Provisional Settlements. Negotiating new strategic accounts that connected interpretations of the past, present, and future was often arduous, yet forward movement was only possible to the extent they achieved some resolution of views. Comparison of the five projects indicates that distinct, sometimes implicit, and often temporary connections among actors' temporal interpretations undergirded each strategic decision. Such "provisional settlements"—to use Girard and Stark's (2002, p. 1947) term—weave together particular interpretations of the past, present, and future. They are *settled* because they are stabilized enough to make it possible to take concrete steps and *provisional* because they are context specific, limited in time, and open to later reinterpretation (see also Kellogg et al. 2006). Studies of efforts to achieve settlements in social movements (Armstrong 2005) and national politics (Burton and Higley 1987) suggest that this process involves finding plausible alternatives that reduce conflict among interested parties and are thus broadly acceptable. Our analysis indicates that these two criteria—*plausibility* and *acceptability*—were accompanied by a third requirement: that settlements provide a *coherent* strategic account that logically connects projections of the future with understandings of past history and present concerns.

We further found that where coherence, plausibility, or acceptability was not achieved, interpretive breakdowns occurred. Research suggests that stabilized settlements can become a relatively unquestioned part of doing business and invoked habitually. Yet when settlements are no longer useful in making sense of the world in which participants operate, they fall apart (Agar 1986, Suchman 1987, Winograd and Flores 1986). At CommCorp, breakdowns were precipitated in multiple ways. Changes in the environment were an important source of destabilization. When the optical market crashed, established strategies no longer fit with pressures from outside the organization. We also found that ongoing work with particular settlements had the potential to destabilize them, disrupting their (somewhat fragile) coherence, shifting them in ways that were no longer plausible given conditions in the organization, technology, or environment, or producing internal disagreements so that they were no longer acceptable to different constituencies. Similarly, decisions in one project could throw into relief inconsistencies in or incompatibilities with other projects, thus precipitating breakdowns elsewhere. Table 4 describes the three criteria for breakdowns and provisional settlements—that they are (in)coherent, (im)plausible, and (un)acceptable—using evidence from the five projects.

Breakdowns initiated new rounds of temporal work. Participants sought ways to reduce or transcend the tensions associated with a breakdown to get moving again. They resumed their efforts to seek alternative connections among interpretations of the past, present, and future, working until they achieved convergence on another strategic account. Although breakdowns created problems, they were also productive, provoking creative temporal work to develop new insights. To make strategy, it seems, actors had to make settlements. But these settlements should not be confused with consensus. Rather, they were strategic accounts that actors agreed to abide by "for now" and which were sufficiently stable to enable forward progress on the project. These provisional settlements functioned like "maps" in Weick's (1990) sense that "any map will do" when faced with the need to take action in an uncertain situation.

The literature on project dynamics has suggested that turning points are crucial to progress and that they may be triggered by either forces external to the project, such as corporate schedules and market rhythms (Ancona and

Table 4 Characteristics of Breakdowns and Provisional Settlements: Coherence, Plausibility, and Acceptability

Provisional settlements		Breakdowns	
Characteristics	Examples	Characteristics	Examples
Coherent • Projection of the future is consistent with understandings of the past and of present concerns • Can create a coherent connection between the past, present, and future (tensions between interpretations are largely resolved) *Plausible* Interpretations of past, present, and future: • Explain the external environment including market or technological changes • Offer a distinctive competitive position • Provide a reasonable response to competitor actions • Match resources and capabilities *Acceptable* • The particular articulation of interpretations of the past, present, and future reduces conflict among involved actors	• Lightwave: Coalescence on view that business unit needs should predominate is plausible given the understanding of market trends (plausible). The plan to "revector" by shutting down the project is consistent with a repositioning of ATG as an "investment portfolio" (coherent and acceptable). • Last Mile: Coalescence on view that business unit needs should predominate is plausible given the understanding of market trends (plausible). Plan for a limited investment in business unit project is consistent with a view that "technology push" had failed (coherent). Agreement that some, but limited, investment is required (acceptable). • Multiservice: Focus on specific customer requests and on "bridge" technologies that protect legacy equipment investments is consistent with the market slowdown (plausible), with CommCorp's historical strengths in relationships with carriers (coherent) and with a focus on customer needs (acceptable). • Module: Focus on immediate "wish list" of a business unit is consistent with downturn in market (plausible), the need to shift away from a "technology push" approach (coherent), and with shared views about serving business units during hard times (acceptable). • Savior: Exploration at a low level (acceptable) of the potential convergence of networking and computing is consistent with the slowdown in optics (plausible) and the idea that ATG is an "investment portfolio" and must maintain some view to the "horizon" (coherent).	*Incoherent* • Projection of the future is *not consistent* with understandings of the past or of present concerns • *Cannot* create a coherent connection between the past, present, and future (tensions between interpretations persist) *Implausible* Interpretations of past, present, and future *do not*: • Explain the external environment including market or technological changes • Offer a distinctive competitive position • Provide a reasonable response to competitor actions • Match resources and capabilities *Unacceptable* • The particular articulation of interpretations of the past, present, and future *does not reduce* conflict among involved actors	• Lightwave: Team admits they "don't have a map" for strategy in optics. Attention to present concerns of the business units is not consistent with the historical emphasis on optics (incoherent). Project view of optics as the "way of the future" is not consistent with the rapid decline in the market (implausible). Extensive disagreement in the organization about further investment (unacceptable). • Last Mile: Vision to develop high-volume, standardized products for the access market does not match CommCorp capabilities for highly customized, big-ticket products (implausible) and creates conflict in the organization given previous decisions to exit access technologies (unacceptable). • Multiservice: Emphasis on a new optical technology is not consistent with perceived lack of willingness by carriers to invest in new equipment (implausible). • Module: Charging for software rather than for hardware inconsistent with understanding of past approaches (incoherent). Increasing worries that the project might "commoditize" CommCorp's products, which would erode competitive position (implausible and unacceptable). • Savior: "Flip-flops" on project as a result of inconsistency between a view of future convergence of computing and networking and a sense of CommCorp's resource and capability constraints (implausible).

Chong 1996), or internal project pressures such as workflow requirements (Gersick 1988, 1989). We found that in each of CommCorp's five projects, such influences—external to the organization (e.g., changes in the market that created urgency for solutions), external to the project (e.g., structures such as formal review meetings, deadlines set by senior executives, or requests from business units as well as decisions made on other projects), and internal to the project (e.g., structures such as work plans or preparations for team meetings as well as ongoing temporal work)—could lead actors to resolve differences in their interpretations; that is, in responding to these pressures, actors sought settlements that would be sufficiently coherent, plausible, and acceptable to keep the project moving.

Vince's actions to reach a settlement in the Savior project are illustrative. After a few months of debating ideas and trading analogies about what the Savior strategy could be, the team finally settled on a particular strategic path. As Vince explained,

> [The reason that we are] not so lost now is that . . . I forced a couple of parameters on the project. We were just goofing around, and we can't do this forever. I made the decision to focus. Given that the market trend of convergence is happening out there, we will just pick a customer set that we have power over and develop a solution for them. This has simplified the problem. Every other variable is fixed, so we can just solve one problem. This constrains the solution. . . . It may not yield anything, but it will give us learning, and it focuses the team. We like to have constraints because it gives us a sense of direction. It may

> not be the right direction, but it gets us moving. Also, it gives us a realistic hope that we can do something, that it is not just some dream. The end goal is a realistic goal. It's not something monumental like "displace [a major market player]." I've taken away the magic act.

Vince's decision to force a deadline got the team to move from intensively generating creative alternatives to settling on a particular set of interpretations that allowed them to focus their efforts. This provisional settlement coupled a vision of network and computing convergence with a reorientation toward enterprises rather than carriers. However, to push forward, the team members needed to rethink CommCorp's history, viewing it not as entailing the development of optics, building out the core of the network, or serving carriers, but rather as creating blockbuster technologies that revolutionize the industry. Indeed, CommCorp had created market-changing products at least twice before in its history with products in digital and optical communications. It was by reference to this alternative account of the company's history that the Savior project team was able to generate a coherent, acceptable, and plausible strategy.

Interestingly, our research showed that the influences that enabled settlements were also, at other times, sources of breakdowns. External or internal influences did not automatically lead to settlements. Breakdowns could occur because of changes in the environment, but they could come simply from ongoing efforts to carry out decisions within the project or from decisions made in other projects that highlighted inconsistencies. For example, in the Lightwave project, the final decision to shut it down was forced by acceleration in the market decline for optical products that made further investment unacceptable. But the initial breakdown that moved Lightwave team members to engage in temporal work that generated alternatives was triggered by earlier signs of the market crash. Thus, pressures from the environment sometimes broke down existing settlements, and at other times, they pushed the organization toward new, more coherent, plausible, and acceptable solutions. The "revectoring" of Lightwave (as ATG leader Brad Copeland put it) would not have been possible without the initial breakdown that created the space for actors to reenvision the future while questioning existing understandings of the past.

Once breakdowns occurred, deadlines and other structures were not always successful in achieving closure. Attempts to structure progress can always be circumvented (Orlikowski and Yates 2002). In the case of the Multiservice project, Theresa Veneto, as head of the Steering Committee, tried several times to get Jack Stafford (one of the project leaders) to present his proposal. Jack took deliberate steps to avoid doing so because he did not see a way through the divergent interpretations about the future potential for a Multiservice strategy. Each time Theresa announced a Steering Committee meeting with Multiservice on the agenda, Jack found reasons to be unavailable. When she sent an email to Steering Committee members in July 2002 with the agenda, Jack replied, "This is rather short notice. I thought the Steering Committee was next week. I will try to arrange things to attend." In September, she tried again, and he wrote back, "I will not be presenting on the Multiservice project today. I'm still waiting for some analysis from the business people plus the email announcing this meeting must have been lost in the system since I never received it." Theresa's efforts to push toward a decision through formal processes thus failed to trigger a settlement. Where temporal work did not surface coherent connections among interpretations, efforts to push to a settlement—even a provisional one—did not succeed.

The breakdown in the Multiservice project was only resolved when Jack engaged in further temporal work with others to rethink current priorities and articulate a revised future vision that helped the team settle on a coherent strategy. He brainstormed with newly added fellow project leader Edward Fischer about what a viable strategy might be and then deliberately sought out customer interest. By securing a carrier as a test site for the technology, he was able to get the ATG decision-making bodies to accept a future vision to pursue bridge technologies that linked legacy equipment and new optically based services for CommCorp's carrier customers. This was plausibly connected to an understanding that CommCorp's success lay with serving carriers, and that to do so during the market crash meant finding low-cost solutions to new services. As a result, the Review Board allocated resources toward pursuing this strategy.

These examples highlight an important insight from our analysis of temporal work. Settlements were achieved only through what has been termed elsewhere "skilled action" (Fligstein 1997). Where actors were skillful in performing temporal work, able to mobilize collective action, and capable of convincing others about a particular articulation of temporal interpretations, they could enable forward movement. Skilled action to generate alternatives, leverage external pressures and relationships, take advantage of or create structures such as deadlines and meetings, and connect ideas to outcomes in other projects increased the intensity of temporal work and also enabled the achievement of settlements.

For example, Vince's skill in envisioning new futures and his ability to create forcing mechanisms for closure led the Savior project toward a bold strategy. On the other hand, in the Last Mile project, marketing director Terrence Smith failed to reach consensus through a process he called the "meat grinder" intended to mix together divergent views and generate connections. Despite long meetings to go through the meat grinder process, interpretations did not converge. This resulted in a non-decision by the Review Board: the team was directed to resolve their differences. Actors less willing

or able to engage in temporal work, such as Jack in the earlier phases of the Multiservice project, had to find other ways (such as subverting deadlines) to maintain the breakdown until they could find a way to construct a strategic account that connected the past, present, and future coherently, plausibly, and acceptably.

By definition, provisional settlements are neither given nor fixed. Temporal work can disrupt existing understandings and produce an array of alternative interpretations. As Girard and Stark (2002) pointed out, efforts to achieve coordinated outcomes are never friction-free. The ongoing deliberations we observed in the five projects at CommCorp were an essential part of the temporal work that helped achieve forward movement in the face of the market crash. External and internal pressures to reach settlements were only effective to the extent that temporal work had already negotiated interpretive differences and generated alternative, potentially coherent, plausible, and acceptable strategic accounts. Converging on one of these accounts then enabled the project members to shift from negotiating meanings to implementing concrete strategic choices and actions.

Making Strategic Decisions—Achieving Continuity and Change

Integrating these insights about negotiating interpretive differences and configuring provisional settlements allows us to understand how strategies can depart more or less from the status quo. Turning to the relationship identified in Figure 1, arrow (1), and to the summaries in Table 3, we see that the more intensively actors reimagined the future, rethought the past, and reconsidered present concerns, the more the projects produced strategies that represented radical departures for the organization. It was not that technologies a priori represented greater or lesser change, or that new technologies forced people in the organization to engage more intensively in temporal work. Rather, the evidence from CommCorp suggests that the degree of change represented by a technology strategy was related to the degree to which the actors in the organization negotiated their interpretive differences to produce alternative understandings of the past, present, and future. As one manager suggested about the Multiservice project, whether it ended up being incremental or radical depended on how it was conceptualized by the actors:

> On the surface, Multiservice is a close-in tactical project that is near-term product oriented or evolutionary. But you can build on the core in further phases [to make it radical]. Multiservice is part of the solution that will converge transport to do streaming and packets and then to do new applications. So Multiservice could be seen as both evolutionary and radical or next-generation. (Edward Fischer, director, Engineering)

As was evident for all the projects we studied, the intensity of temporal work shaped how radical the proposed strategies became over time.

Dynamics of Temporal Work

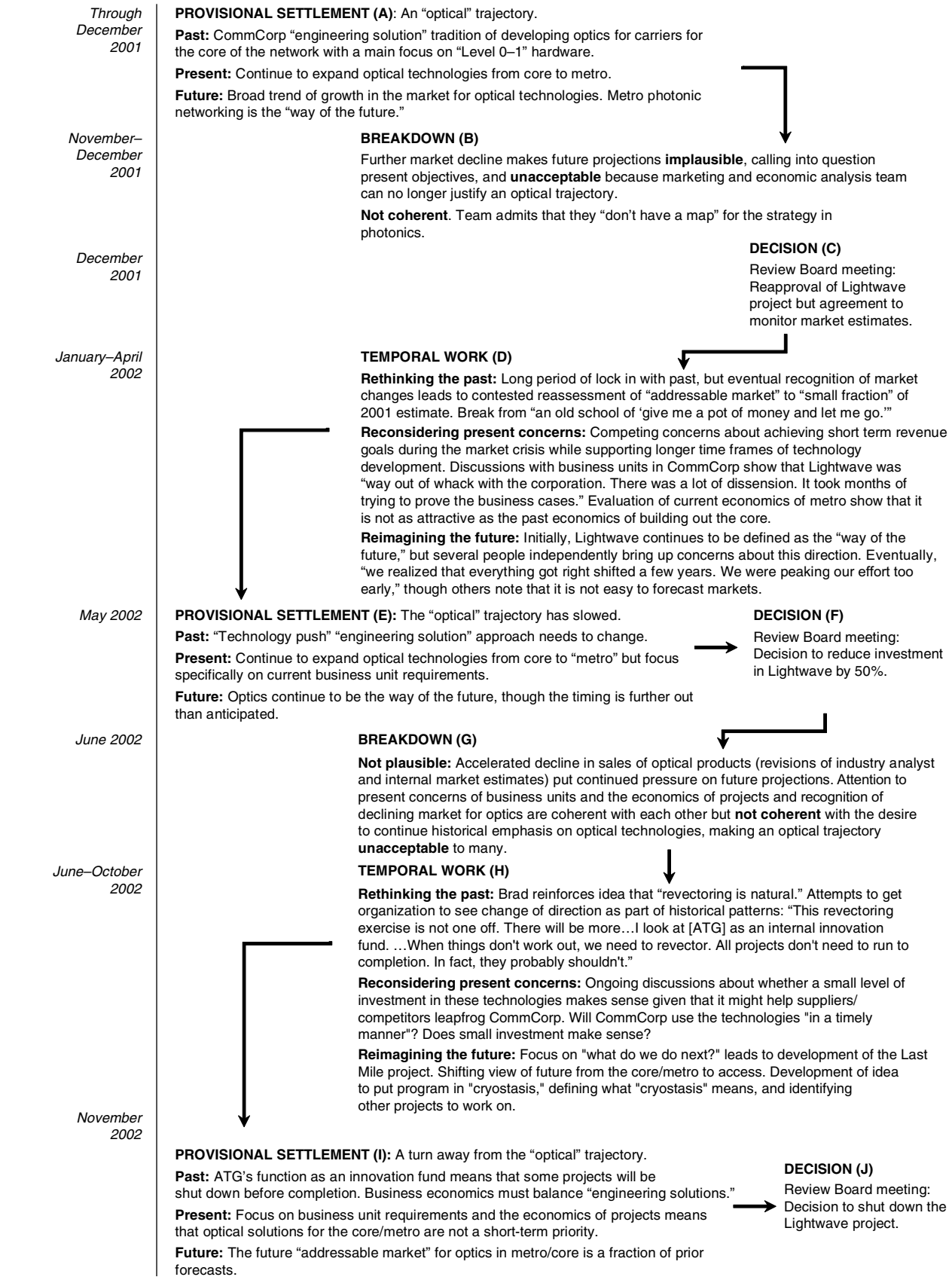
To understand how the flow of temporal work produced settlements that resolved differences among actors and led to strategic decisions, we considered process maps showing how each of the projects evolved over time. We start with details from one case—Lightwave—whose chronology is laid out in Figure 2, and then we summarize the patterns for each of the other projects. It started with a breakdown ((B) in Figure 2) in the prior settlement of understandings about the strategy of the company ((A) in Figure 2). CommCorp had traditionally pursued an optical trajectory. It had been an engineering-driven organization focused on developing optical hardware to build out the backbone of the communications network. Although networks have many layers—from physical hardware all the way up to applications such as Secure Sockets Layer or Hypertext Transfer Protocol—CommCorp had always focused on Layers 0–1, which are the basic hardware building blocks of the system. And their customers had always been carriers such as AT&T, the Bell regional companies, and MCI, who were building these networks. Based on a belief that optics would continue to be the "way of the future," CommCorp had set its sights on expanding optical technologies from the backbone to metro installations. The Lightwave project was aimed at defining the direction such a metro optical technology should take and developing a prototype optical switch for this setting.

During 2001, as the market for optical technologies began to slow down, industry analysts speculated about a permanent shift in demand. This evidence made CommCorp's optimistic projections of growth for optics implausible. As discussions proceeded in various ATG strategy meetings, the Lightwave team admitted that they did not "have a map" for a coherent strategy in photonics, and members of the marketing and economic analysis teams began to oppose the optical trajectory. This precipitated a breakdown ((B) in Figure 2). Without an alternative strategy for moving forward, the Review Board, in its regularly scheduled December 2001 meeting, reapproved the Lightwave project but extracted an agreement from the team to monitor market estimates and change direction if demand declined further ((C) in Figure 2). This interpretive breakdown triggered tremendous work to reassess the strategic direction of CommCorp from within and outside of the Lightwave team.

This project followed cycles of temporal work, provisional settlements, breakdowns, and further temporal work. Decisions about changes in resource allocation were only possible when settlements were achieved. Following the Review Board meeting in December 2001, a marketing team member commented,

> I let it go but kept my ear to the ground. I forget if someone asked me to do this or not, but Brad [the head of ATG] called a meeting and asked Jack and Hugh [the project leaders] what the strategy for optical technologies

Figure 2 Temporal Work on the Lightwave Project Over Time



> was. It prompted me to do an analysis that showed a much smaller market opportunity for Lightwave. (George Arden, manager, Marketing)

This assessment succeeded in getting the attention of the Review Board, challenging the historical funding for Lightwave, and opening up space to discuss the possibility of reducing or eliminating it. This temporal work ((D) in Figure 2) required a break from the "old school of 'give me a pot of money and let me go.'" Conflicts raged between desires to achieve short-term revenue goals and concerns about protecting longer-term technology development. Theresa Veneto, head of the Steering Committee, reflected on those deliberations in an email sent to team members: "There's a split about whether this is the time for photonic switching (some want to stick with current solutions . . .). Cost reduction would be the story for now. . . . " Later, the Review Board determined that further investments in the Lightwave strategy were "way out of whack with the corporation," but getting to that point involved "a lot of dissension. It took months of trying to prove the business case" (Review Board member Terrence Smith, director, Marketing). The prior strongly held view that optics were the "way of the future" was moderated by a recognition that forecasts would be "right shifted," and ATG was "peaking our effort too early" (Hugh Collins, senior scientist).

By the scheduled May 2002 Review Board meeting, discussions had led to a recognition that ATG needed to shift from their "engineering solution" approach to one more responsive to the needs of the business units. Many people clung to the idea that optics were still the most important technology for the future, but all recognized that the timing was further out than had been expected the year before. This provisional settlement of understandings ((E) in Figure 2) made it possible for the Review Board to halve the investment in the Lightwave project ((F) in Figure 2). This decision further opened the door to debate about the viability of an attenuated Lightwave strategy. It soon became apparent that a continued investment in optical technologies was not coherent with attending to business unit needs, therefore making it unacceptable to many in the organization. The accelerating decline in the market made projections of future growth in optics implausible. This breakdown ((G) in Figure 2) in the settlement invigorated further temporal work ((H) in Figure 2) to define an alternative trajectory, one in which investment in optics for the metro and core networks would no longer be part of the corporation's strategy. The head of ATG, Brad Copeland, began to emphasize the idea that "revectoring is natural." He reframed ATG's history as one of pursuing a portfolio of projects as venture capital firms do, in which not all projects get funding on subsequent rounds of investment. At the same time, team members began to wonder if a 50% investment would lack sufficient scale to produce anything useful.

By the time of the November 2002 Review Board meeting, the debate about the Lightwave strategy had stabilized around the understanding ((I) in Figure 2) that "technology push" had failed, that optics for the metro no longer seemed plausible given current business unit needs, and that the downturn was a permanent correction rather than temporary blip. This provisional settlement led to the decision ((J) in Figure 2) to withdraw funding and put the project in what was termed "cryostasis." This was recognized as a useful, if imperfect, solution:

> The drawback is that it is not easy to forecast markets. If the markets come back more quickly, CommCorp may lose some of its advantage. We should have been slower in the decision, phasing down the budget based on milestones. Brad [the head of ATG] thought it was better to act more decisively in a step function. But this reduction [also] allows ATG to put more focus on Multiservice and other projects. We could not have started Last Mile without taking money from Lightwave. (Erik Helgesen, director, Engineering)

The managers also understood that this settlement would be subject to later reinterpretation. As Brad argued in a Review Board meeting, "What does 'cryostasis' mean? We are putting Lightwave on the shelf now, but what would it take to relaunch? I'm not saying we are going to relaunch in January, but let's talk about a plan. I strongly believe photonics is somewhere in the future."

The flow of activity across the various strategy-making practices associated with temporal work in the Lightwave project is summarized in Figure 3. Each set of activities is described and accompanied by the corresponding numbering from the arrows in Figure 1. The dotted arrow represents the overall relationship between the temporal work in the project and the project outcome (arrow (1) from Figure 1). The remaining arrows follow the timeline of the project. Starting in the bottom left, the source of the change in strategy (as described above) came from external pressure from the changing market (corresponding with arrow (2) in Figure 1: "Inconsistency between external events and current settlements can lead to a breakdown"). The timeline for the Lightwave project shows how intensively the various actors engaged in temporal work, leading first to a partial shutdown of the project and then, once they worked through the implications of that decision, to cryostasis.

We completed similar process maps for the other four projects, shown in Figures 4–7, highlighting the dynamics of temporal work, breakdowns, provisional settlements, and decisions in each. In comparing these figures, we found they followed different patterns: some, like Last Mile (Figure 4) and Multiservice (Figure 5), got stuck in multiple breakdowns; one, Module (Figure 6), involved very little temporal work until the decision

Figure 3 Summary of Temporal Work in Lightwave

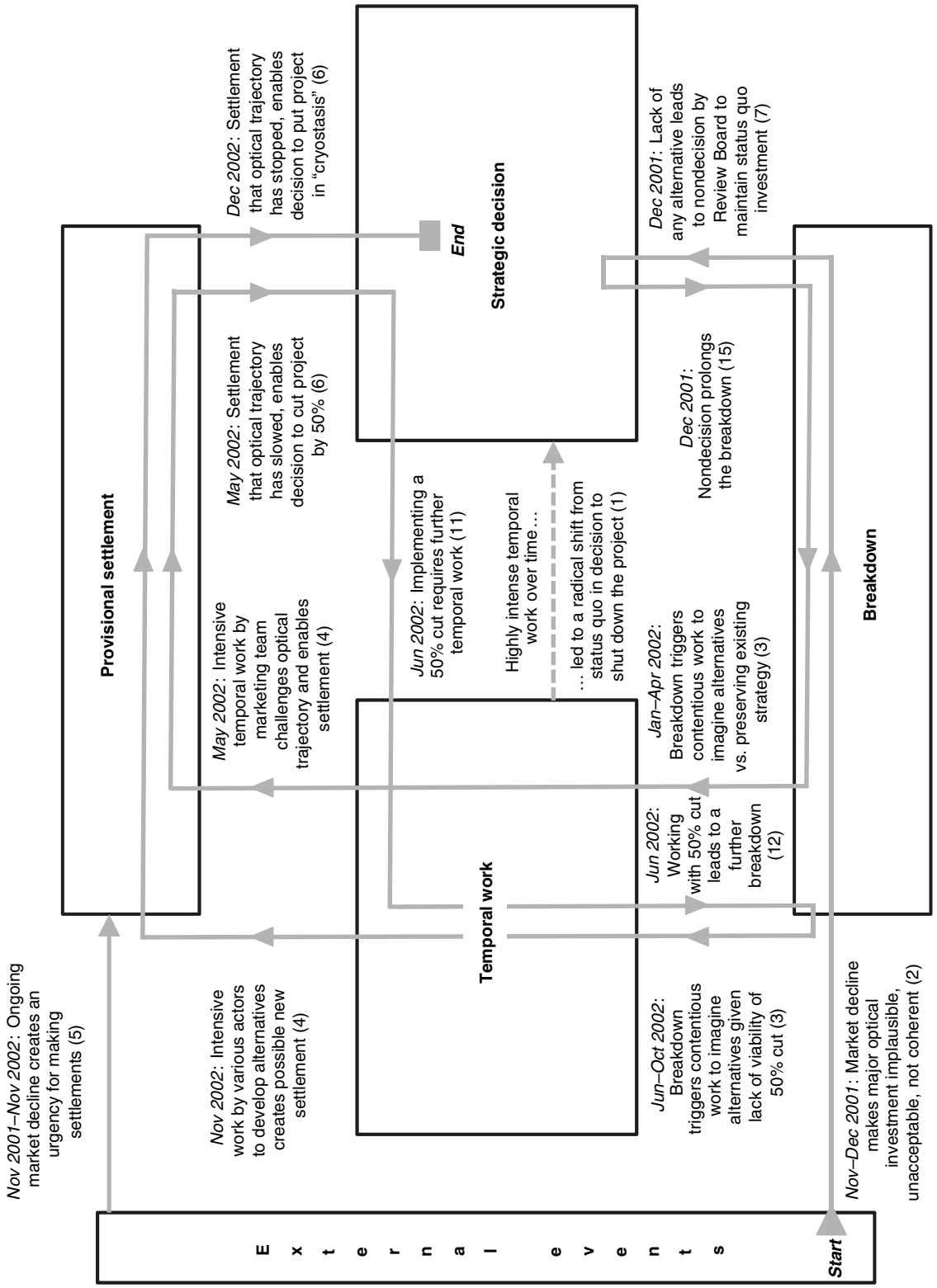


Figure 4 Summary of Temporal Work in Last Mile

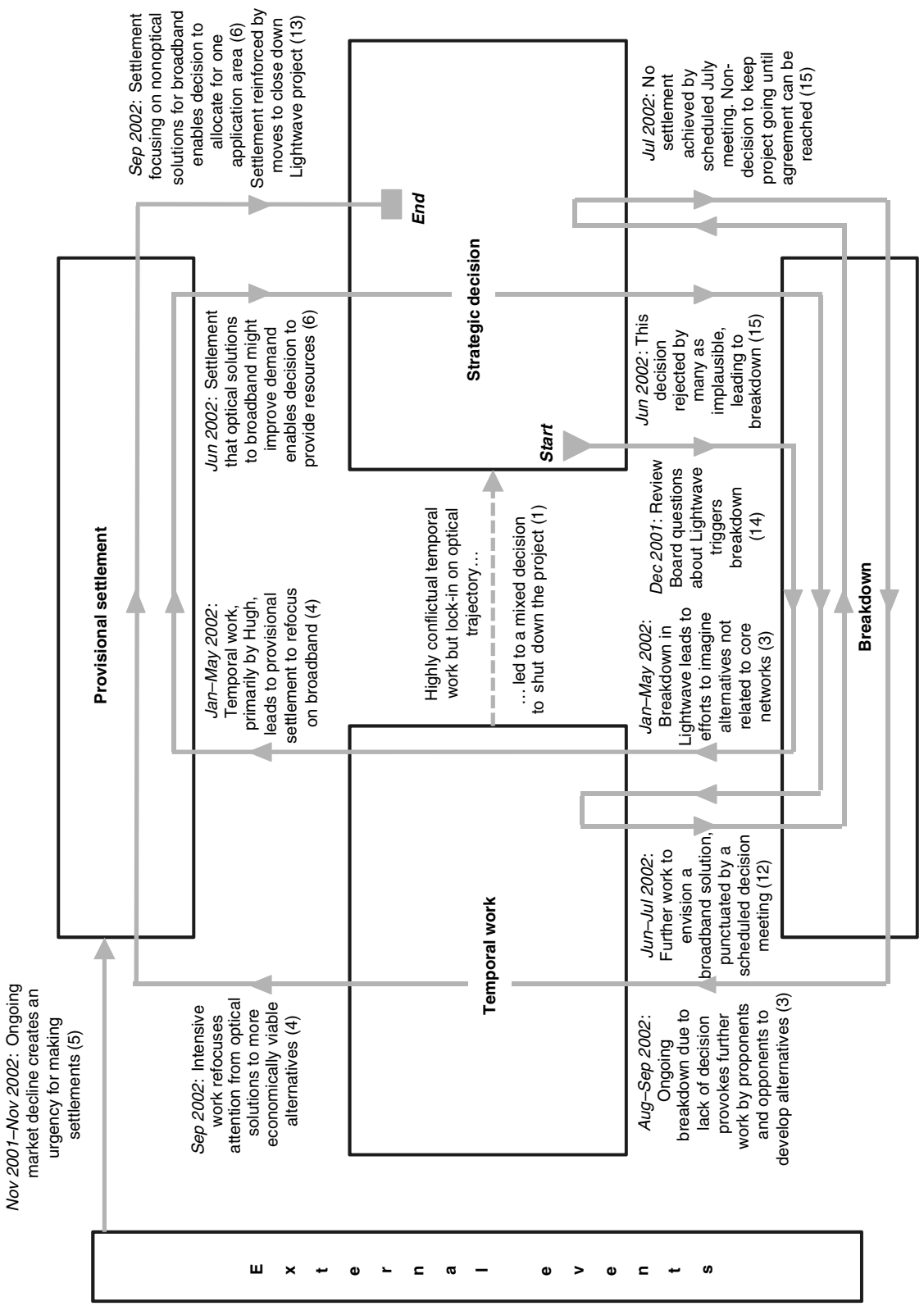


Figure 5 Summary of Temporal Work in Multiservice

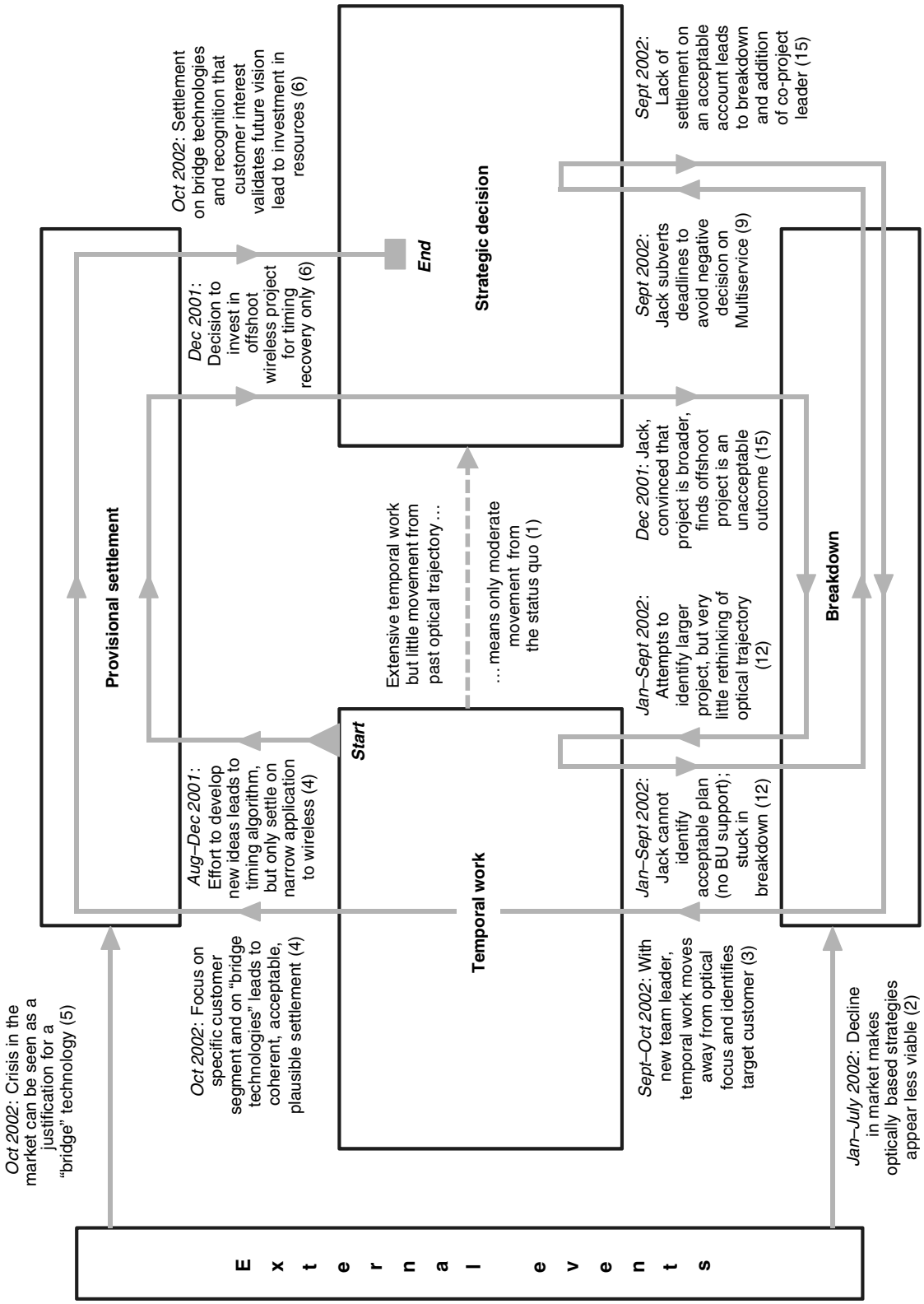


Figure 6 Summary of Temporal Work in Module

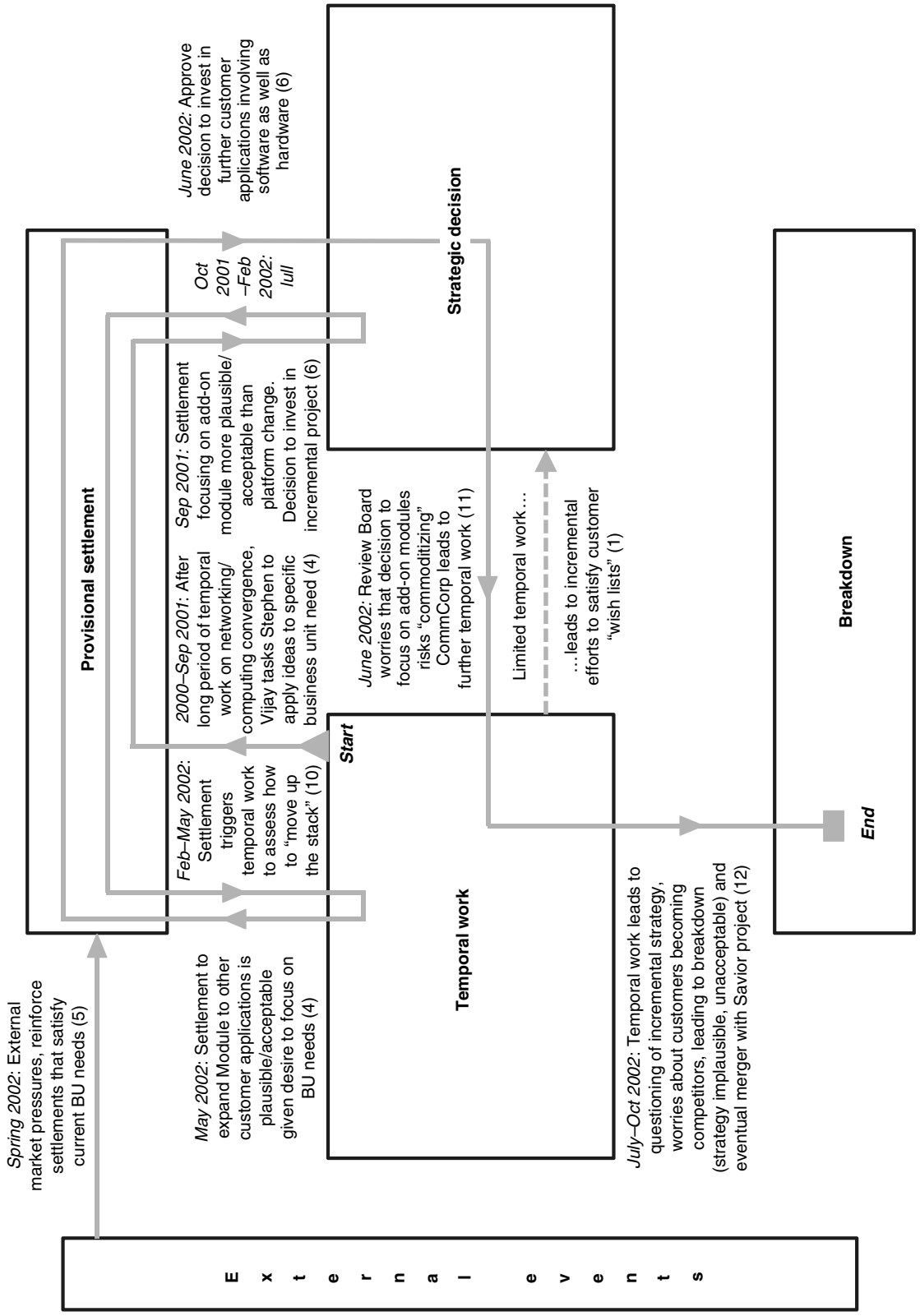
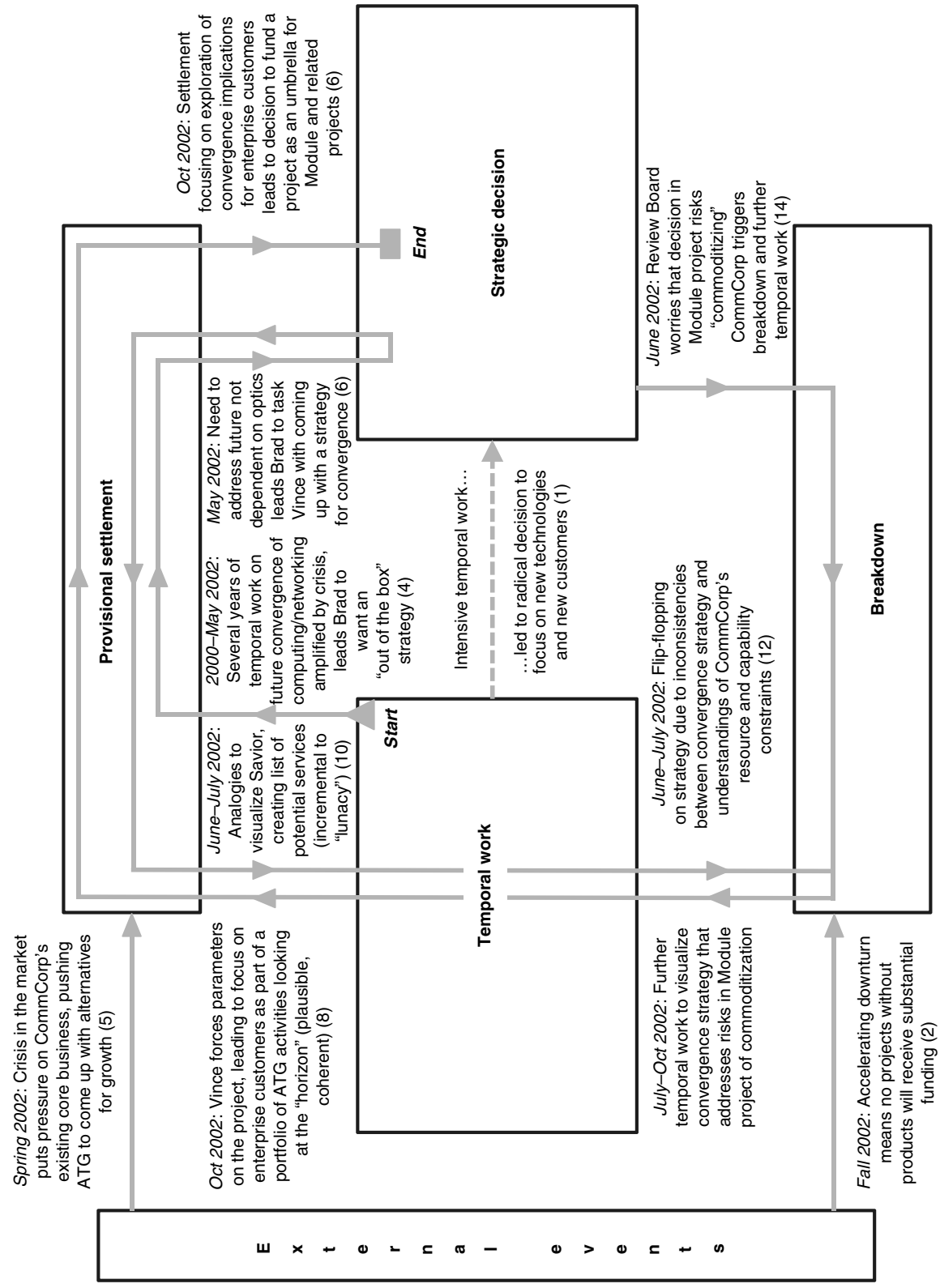


Figure 7 Summary of Temporal Work in Savior



to invest in incremental technologies triggered concerns that this might commoditize CommCorp over time. Others, such as Savior (Figure 7) and Lightwave (Figure 3), included long periods of intense temporal work, successive breakdowns, and, ultimately, radical strategies.

The Last Mile project (Figure 4) was an attempt to save the optical research that had been cut from the Lightwave project by reframing the problem as one of lack of demand rather than oversupply of optics. Hugh argued that the problem was with the "last mile" connections to end users, where there was much lower bandwidth than in the core of the network. The idea that "access is now the bottleneck limiting deployment at the core" led to a proposal that the Last Mile project should refocus optical research efforts on the edge of the network. This idea was sufficiently appealing to the Review Board to justify an initial investment to refine the strategy. But analyses by marketing team members indicated that pursuing access technologies would be implausible (other companies were ahead of CommCorp), incoherent with corporate history (CommCorp had recently exited a different access business), and unacceptable (major disagreements existed about the way forward). This triggered further temporal work to consider whether the past choice to exit access had been a "blunder" and whether this project was just another "optical playground" to replace Lightwave. Because no one could visualize the killer apps that would drive demand, many argued that "it's a copper-based world for now" (marketing team document). The deliberations were intense and polarized, and even Terrence's efforts to implement the "meat grinder" failed to bring together divergent views. Only after the engineers let go of their commitment to optics were they able to reach a settlement that focused on nonoptical broadband solutions.

Multiservice (Figure 5) too was hampered by the team's inability to break from the past history of CommCorp as an optics company. Born of a request by Jack for his team to identify future technologies, the project quite easily reached a decision to use the proposed solution (an algorithm that solved timing problems in transmitting voice and video in packets over a data network) in an incremental offshoot project for the wireless business unit. But Jack was not satisfied with this outcome and continued to pursue a bigger project. Because many in ATG felt that it did not respond to the current pressures created by the market crisis, there was little support to invest further. As a result, Jack relied on strategies to subvert deadlines and avoid decision meetings to protect the project. Only when a new co-team leader was added to the project was Jack able to give up on the optical trajectory and focus on a system that would meet the needs of a major customer. It was this strategic account—building technologies to bridge between legacy equipment and optics for specific customers—that enabled Jack to get support for investment.

Module (Figure 6) had its origins in Vijay's imaginings about the future convergence of networking and computing. After a plan was developed to implement the idea as a module in a larger system rather than as a new technology platform, it was relatively easy to satisfy some specific needs of a business unit. But as implementation continued, ATG managers became concerned that this project risked "commoditizing" CommCorp, meaning that it would give away power over the system to other players in the supply chain. As a result, extensions of the project were rolled into the Savior project that was being developed in parallel. Savior (Figure 7) was an effort to develop an inclusive strategy for the convergence of networking and computing. Because this umbrella was extremely broad, the team engaged in intensive temporal work, especially in the form of trading analogies, to figure out what a technical application would look like. It was only when Vince imposed some parameters on the project that they were able to produce a strategy that was tangible enough to garner support. This solution focused on a radical vision of convergence as an alternative to optics (which was coherent) and enabled ATG to act on its role as an "investment portfolio" with a view to the "horizon" (which was plausible), but it would be developed on a limited budget (which made it acceptable).

As these process maps demonstrate, temporal work is necessarily complex and recursive, entailing skill and creativity as well as subversion and deadlock. From the comparison across projects, we developed the model of temporal work in strategy making that we introduced in Figure 1. We find that strategy making in practice entails settlements on particular strategic accounts that connect interpretations of the past, present, and future and that are seen to be coherent, plausible, and acceptable. Such settlements are produced as actors iterate among understandings of the past, present, and future; breakdowns in these accounts; and temporal work to reconstruct them. The intensity of temporal work was associated with the degree of departure from the status quo represented by the strategy. Although it would be inappropriate to claim generalizable findings from our data of five projects, the dynamics and relationships identified in the model can be considered a set of useful propositions for further research.

Discussion and Conclusion

The study of CommCorp offers a systematic understanding from one organization of how constructing a strategic account out of multiple, divergent interpretations of the past, present, and future produces particular strategies that themselves have critical implications for organizational outcomes. Our analysis of temporal work complements existing research on strategic sensemaking (Balogun and Johnson 2004, Gioia and Chittipeddi 1991, Gioia et al. 1994, Kaplan 2008b, Maitlis and Sonenshein 2010, Rouleau 2005) by explaining how

and why some strategic accounts work and some fail in practice, and, for those that do work, why some lead to status quo outcomes and others lead to change.

Based on our analysis, we argue that temporal work is a central practice of strategy making. An analysis of strategic change is, thus, incomplete without considering how actors negotiate and link their divergent interpretations of the past, present, and future. These insights reinforce the potential of research approaches that adopt a practice lens on strategy. Studying strategy just like any other practice sensitizes us to the many actors involved; the projects they work on; their ongoing activities; and the multiple views, interests, norms, and tensions of their work (Jarzabkowski and Kaplan 2010, Orlikowski 2010, Whittington 2007). Strategy is not the outcome of decisions taken by a monolithic organization but rather is produced in the ongoing interpretations and interactions of multiple organizational participants in practice and over time. Our application of the practice lens produces insights about temporal work that lead us to challenge key assumptions in conventional studies of strategy and propose alternative explanations for strategic outcomes.

Implications for Thinking About Time and Temporal Interpretations

In emphasizing temporal work, we contribute a new focus to the organizational scholarship on time. The extensive research on time in organizations has historically been concerned with different ways of characterizing the passage of time—for example, clock or event time (Zerubavel 1981), linear or cyclic time (Clark 1985), event sequencing (Helfat and Raubitschek 2000, Ramaprasad and Stone 1992), activity pacing (Ancona and Chong 1996, Gersick 1989, Perlow et al. 2002), or temporal structuring (Bluedorn 2002, Orlikowski and Yates 2002). Our study suggests that we also need to examine how actors make interpretive links in time, as this significantly shapes organizational choices and actions.

Our use of theories of temporal embeddedness (Emirbayer and Mische 1998, Flaherty and Fine 2001, Mische 2009, Sewell 1992) to focus on temporal interpretations also helps draw together various strands of research in the field of managerial cognition that have emphasized the importance of interpretations in influencing strategic outcomes (e.g., Gilbert 2006, Jackson and Dutton 1988, Milliken 1990). Emerging scholarship in managerial cognition has begun to recognize the potential for examining connections among interpretations of the past, present, and future. For example, studies have suggested that cognitive frames are made up of diagnostic assessments of present concerns and prognostic assessments of what the future will hold (Kaplan 2008b), but this work has treated the past primarily as a source of frames rather than as subject to interpretation and reinterpretation in its own right. Other scholars have turned to the concept of identity to make the link between past perceptions of organizational identity and current interpretations of the environment (Benner and Tripsas 2012, Tripsas 2009; see also Gioia and Thomas 1996 for some early foundations of this idea). Similarly, advocates for a post-Weickian approach to sensemaking (Gephart et al. 2010, Wiebe 2010) point to a need for greater attention to the prospective as well as retrospective interpretive processes. Our model of temporal work in strategy making contributes to these developments in the field and, indeed, would encourage moving further in this direction.

Implications for the Treatment of the Past, Present, and Future in Strategic Management

The importance of temporal work highlighted by our analysis of strategy making in CommCorp also provokes a reconsideration of how time is treated in strategic management research. First, a core assumption of much of the strategic management literature—classic theories of competitive advantage (Ghemawat 1999, Porter 1980) and resource-based views (Barney 1986, 1991; Peteraf 1993; Prahalad and Hamel 1990; Wernerfelt 1984)—is that more accurate forecasts of future competitive actions or the future value of capabilities will lead to strategic success. Our study suggests that generating future forecasts is not so much about obtaining more information or analyzing information accurately as it is about the plausibility, coherence, and acceptability of accounts that link interpretations of the future to the past and present. Indeed, data are interpreted, translated, and reconceived in the light of past histories and present concerns as actors reimagine the future. Furthermore, assessing ex post accuracy is confounded by the potential for self-fulfilling prophecies. Though the future will likely not turn out the way it was projected, this does not mean that projections do not matter. Articulating projections shapes attention, deliberation, investment, and effort. Thus the question should not be whether projections are accurate, but rather what strategic possibilities are enabled and precluded by different projections.

A second implication of a temporal perspective on strategy making is that history matters, but not only in the path-dependent way assumed by behavioral (Levinthal 1997, Nelson and Winter 1982) and resource-based (Barney 1991, Peteraf 1993, Wernerfelt 1984) scholars of strategy. Path dependence has traditionally been portrayed as a relatively deterministic process resulting from stochastic perturbations early in the development of an organization, market, or technology (David 1985, Stinchcombe 1965). The literature emphasizes that the resulting initial conditions are so consequential as to make changing paths difficult (Dosi 1982). More recently, scholars suggested that such historically determinant explanations do not adequately admit the possibility for human agency (Kaplan and Tripsas 2008) and

that actors can, within limits, influence circumstances through "path creation" and "mindful deviation" (Garud and Karnøe 2001). Our study demonstrates that temporal work to negotiate interpretations of the past, present, and future is a crucial process that shapes the degree and direction of such creations and deviations.

The past is therefore not a singular guide to the future. In fact, it is the multiplicity and ambiguity of experiences of the past that afford different interpretations (Sewell 1992, Suddaby et al. 2010). Actors draw differently on the past in different contexts. In our model of temporal work, the past is seen as both a resource for actors' negotiations across interpretive differences and a cage of constraints (Flaherty and Fine 2001). This interpretive explanation of path dependence highlights the process through which future projections produce alternative paths. Furthermore, a path may have within it other elements—alternative approaches and undeveloped ideas—that can be activated in creative ways at later times (Schneiberg 2007) through more or less intensive temporal work. There has been increasing attention in organizational theory to the use of analogies (Gavetti et al. 2005, Hargadon and Sutton 1997). Our analysis shows that analogies are useful because they are a means of connecting alternative understandings of the past with new visions for the future. Thus, path "dependence" may be more usefully seen as an achieved result that emerges from how actors negotiate and resolve their interpretive differences in practice over time.

Third, thinking about temporal work can enrich theories of strategy emergence (Mintzberg and McHugh 1985, Mintzberg and Waters 1985). Recognizing the difficulty of predicting the future, these approaches propose that strategy making can only be a process of responding to emergent realities in the present. Strategy makers can only get hints of the future through tactics such as experimental products or strategy alliances that increase learning in the present (Brown and Eisenhardt 1997). Yet this view does not address why managers select some experiments or directions over others, when the tactics might work and when they might not, or how managers decide what other tactics might be useful. A model of temporal work in strategy making suggests that tactics are useful when they provoke actors to generate alternatives in an iterative, interpretive process. That strategies might be emergent should not imply that they are not deeply connected to the ways that actors project into the future, draw on the past, and prioritize current concerns.

Implications for Understanding Organizational Continuity and Change

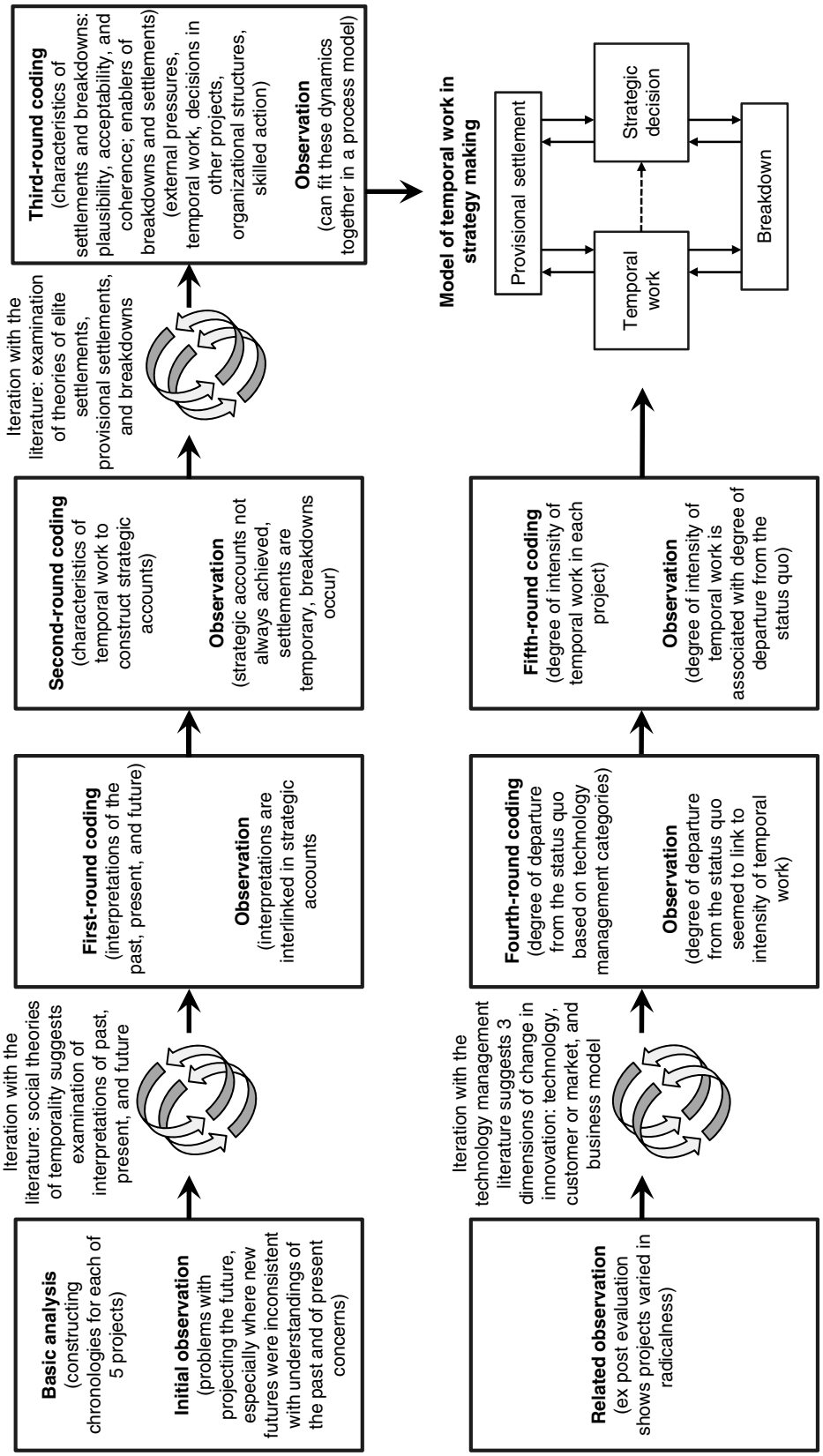
A model of temporal work in strategy making provides theoretical insights to address a long-standing puzzle about the sources of competitive advantage (Barney 1986, Dierickx and Cool 1989, Henderson 2000): Is firm performance mainly derived from luck (based on past endowments) or managerial foresight? Evidence from the field study of CommCorp suggests that both past legacies and future projections significantly shape outcomes, and managers must address the inherent tension between the influences of (multiple) pasts and (multiple) futures. Past experience can manifest itself in routines (Nelson and Winter 1982) that effectively maintain operations. The more these are reproduced over time, the more likely they are to become competency traps (Levinthal and March 1993) when the environment changes. As such, managers must, at certain points, shift emphasis from the past to the future to ensure organizational survival (Gavetti and Levinthal 2000). Thus, it is the very process of projecting the future that renders the past a greater or lesser source of competitive advantage.

Changes in the environment are typically seen to trigger strategic reorientations. However, evidence from our field study indicates that the potential for creative action does not depend only on environmental disruptions. Actors may act to change the situation by reinterpreting the past, responding differently to present concerns, and envisioning the future in innovative ways. These ways of changing taken-for-granted mental models have important relevance for neoinstitutional scholars who have been increasingly interested not just in how certain logics become legitimized but also in how they emerge (Lounsbury and Crumley 2007). Recent research has shown that attention to the intraorganizational microprocesses in which meanings and actions interrelate can shed light on organizational change and resistance (Kellogg 2009, Zilber 2002). Our identification and articulation of temporal work contribute to these views by situating the potential for change as well as continuity in everyday strategy making.

Our model of temporal work in strategy making may help practitioners deal with the challenges of creating strategy in the face of uncertainty. It highlights how skilled actors, if they can imagine alternative futures, can create more degrees of freedom relative to the past. Through an explicit focus on temporal work, actors can avoid having the past predominate in the future by taking action to challenge historical views of past trajectories. An emphasis on temporal work is especially relevant when actors would benefit from challenging received wisdom, reconsidering current concerns, and engaging in an exploration of barely conceivable alternatives. This perspective reinforces the value of "framing experiments" (Schön and Rein 1994) and "strange conversations" (Pitsis et al. 2003, Weick 1979) that allow practitioners to create breakdowns in their ingrained assumptions to reformulate problems at hand. Such interventions involve the construction of new strategic accounts that can prevent organizations from getting stuck in a strategy that is constrained by routinized understandings of the past, myopic views of the present, and limited visions of the future.

Appendix

Figure A.1 Analytical Process of Observation and Coding



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Endnote

[1]The names of the company, division, projects, and participants as well as key technical details have been disguised to protect the confidentiality of the field site and its members.

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