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Understanding Business Process Change Failure: An Actor-Network Perspective

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ABSTRACT: In this paper, we use concepts from actor-network theory (ANT) to interpret the sequence of events that led to business process change (BPC) failure at a telecommunications company in the United States. Through our intensive examination of the BPC initiative, we find that a number of issues suggested by ANT, such as errors in problematization, parallel translation, betrayal, and irreversible inscription of interests, contributed significantly to the failure. We provide nine abstraction statements capturing the essence of our findings in a concrete form. The larger implication of our study is that, for sociotechnical phenomena such as BPC with significant political components, an ANT-informed understanding can enable practitioners to better anticipate and cope with emergent complexities.

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KEY WORDS AND PHRASES: actor-network theory, business process change, case study, information systems implementation, information systems politics, interpretive research, organizational change, power, reengineering, social construction of technology.

THE NOTION OF BUSINESS PROCESS CHANGE (BPC),[1] first introduced to practitioners and academics in the early 1990s, continues to enjoy significant popularity and relevance, whether as part of radical organizational transformation, quality programs, enterprise resource planning (ERP) implementation, or the retooling of business processes for e-commerce [1, 12, 50]. Unfortunately, the promises of BPC have not always been realized, and about 70 percent of BPC initiatives are believed to have failed [24]. Part of the problem has been that the indubitably sociotechnical nature of BPC documented by researchers in this area (e.g., [20]) has often been ignored by practitioners. They have tended to approach BPC in an overly "technocentric" fashion [36, 46], ignoring the role of communication, politics, and leadership issues that have consistently been viewed as critical (e.g., [6, 25, 47, 55]). While isolated studies have been conducted to empirically examine these issues, the field of BPC has remained largely "atheoretical" [22]. Indeed, it could be argued that few (if any) formal social theories have been applied to understand why and how human processes such as communication, leadership, and politics interact with technology-related issues to contribute to BPC failure, and how to manage these processes. Further, empirical studies on BPC in the mainstream information systems (IS) literature have generally adopted a "factor" approach, explicitly or implicitly, in order to explain BPC outcome, thereby ignoring the emergent, complex, and often contradictory sociotechnical interactions that are fundamental to any BPC initiative (e.g., [7, 46]). Consequently, Grover and Kettinger [20] have called for an interpretive approach to help extend the existing body of knowledge on BPC. Specifically, they state:

> [an] interpretive approach does not predefine independent and dependent variables but is aimed at understanding the context of process change and how process change influences and is influenced by the context. This can facilitate the construction of rich knowledge in the area by focusing on the full complexity of human sense making as a process change situation emerges. [20, p. 172]

In this paper, we seek to contribute to the BPC literature by adopting an interpretive perspective, as Grover and Kettinger [20] have suggested. We introduce into the domain the actor-network theory (ANT), a sociotechnical perspective for analyzing the interactions between technology and human processes, and we interpretively apply the concepts of ANT to a case study of a telecommunications company (TELECO, a pseudonym) in the United States that attempted to undertake radical BPC [45]. Our goal in this paper is to go beyond the typical "cursory descriptions" of BPC initiatives and the simplistic "lessons learned" available in the literature [19, p. viii].

ANT can serve as a useful theoretical lens for understanding sociopolitical phenomena such as BPC, especially where technology plays a critical role. Specifically, we believe that ANT can provide added explanatory power over existing theories in two primary ways. First, ANT does not a priori exclude nonhuman actors from the analysis, thereby allowing for a more explicit examination of the enabling or the restricting role of information technology (IT) in a sociotechnical process, such as a BPC initiative. Second, ANT does not a priori distinguish between micro (e.g., individuals) and macro actors (e.g., organizations), and it acknowledges the inherently unstable nature of actors. This allows the analyst the flexibility of considering a sociotechnical collective as a single actor or as a group of individual actors, depending on the level of analysis desirable. Thus, we believe that the application of ANT brings to light a number of implications regarding any BPC initiative that are not readily apparent through the use of commonsense concepts currently used and touted in much of the BPC literature.

ANT: An Overview of Important Concepts

IN ONE OF THE EARLIEST WORKS ON ANT, Callon and Latour [9] outlined how microactors (i.e., individuals) form alliances and enroll other actors, and use artifacts to strengthen such alliances, thus creating heterogeneous networks made of humans and nonhuman artifacts. These networks were found to act as if they were independent autonomous actors; hence, they are referred to as "actor-networks." In the field of IS, ANT has been recognized as having immense potential for understanding the complex social interactions associated with IT [29, 59], and has been used to interpret the social processes associated with technology implementation initiatives in varied contexts (e.g., [27, 39, 60]). Following this line of work, we apply ANT to the domain of BPC.

Actor, which may be human or nonhuman, may be defined as "any element which bends space around itself, makes other elements dependent upon itself and translates their will into the language of its own" [9, p. 286]. Common examples of actors include humans, collectivities of humans, ideologies, methodologies, concepts, texts, graphical representations, computers, and other technical artifacts. As mentioned earlier, ANT employs a "radically relational approach," implying that each actor can be defined and understood only in relation to other actors [34].

Nondiscrimination between human and nonhuman actors is one of the distinguishing and most controversial characteristics of ANT. For example, scientists, fishermen, scallops, and winds have been viewed as actors within this perspective [8]. While many critics have expressed disagreement with the theoretical position that nonalive objects (e.g., an ERP system) can have their own interests, others have argued that this position can provide researchers with a useful metaphor for analyzing complex sociotechnical networks in detail, without unduly worrying about differentiating the social from the technical [28]. In viewing nonliving artifacts as actors, a key issue is: *how can artifacts have interests?* The interests of an artifact can be equated to the interests that have been inscribed in it. For example, it may be

argued that a car's seat belt has the interest of passenger safety that was inscribed in it by the designers [32].

It is important to note that networks can be understood at different levels of complexity or "granularity" [40]. ANT allows a perceptive analyst[2] to "unpack complexity by zooming in—or collapse complexity by zooming out" depending on the objectives [40, p. 244]. Often, in an effort to simplify their investigation, analysts tend to treat networks as individual actors. Such a simplification, referred to as *punctualization,* is possible due to the fact that the effects/behaviors of individual actors can "more or less [be] taken for granted" and thus be unproblematically encapsulated within a "network package" [34]. However, Law [34] warns us that punctualization is always "precarious," because there is a tendency among analysts to overlook complexities within a *failing* punctualized network. Law further highlights the need to switch attention to individual network elements whenever any degeneration appears likely in the network package. For example, a human body is seen as a unitary whole while it works normally; yet a sick person needs to be viewed as a complex network of physiological processes by his or her physician [34].

Translation, in ANT vocabulary, refers to the process of creating a temporary social order, or the movement from one order to another, through changes in the alignment of interests in a network. Law [34] suggests that there can be no absolute means of ensuring effective translation—translation strategies are necessarily local and contingent on the situation. The process of translation can be divided into three stages that are labeled as *problematization, interessement,* and *enrollment* [8]. We note here that translation can only be clearly understood when examined from the vantage point of a specific actor, because, within an organization, there are often multiple actors initiating and engaging in translation with different interests, temporal rhythms, and outcomes. For example, in any organizational change process, each of the concerned parties—say, the management, the consultants, and the employees—may initiate parallel translation attempts to steer the outcome of the resulting network reorganization in their own favor. A *focal actor* is often the *key actor* driving the process of enlisting the other actors' support for the organizational change initiative. In situations where there are multiple key actors attempting to enroll support, for the purpose of clarity, the *analyst* needs to select *a* focal actor from whose perspective it makes most sense to describe the translation process. It is also important to note that owing to punctualization and disintegration of actor-networks, the focal actor may be different at different points of time during the translation process.

Problematization is the first moment of translation, during which a focal actor frames the problem in its own terms, identifies other relevant actors, and highlights how the problem affects the other actors. The focal actor then outlines broad strategies for addressing the problem at hand, and establishes an *obligatory passage point (OPP)* in a way so as to render itself "indispensable" [8, p. 204]. Broadly, the OPP refers to a situation or process that is specified by the focal actor such that all the relevant actors can achieve a shared focus in successfully pursuing the interests attributed to them. It is useful to note that while the OPP lies in the direct path of the focal actor, other actors need to be convinced to pass through the OPP (i.e., modify their alignments

and behaviors such that they are consistent with the OPP). We illustrate the notion of OPP and its implications in the discussion on problematization later in the paper.

The second moment of translation, referred to as *interessement,* involves convincing other heterogeneous actors that the interests defined by a focal actor for them are, in fact, consistent with what their own interests *should be.* Moreover, incentives are created for actors such that they are willing to take a detour from their earlier charted paths and pass through the OPP defined by the focal actor. It is important to note that the focal actor does not necessarily strive to create an alliance with *identical* interests; rather, the intent is to have allies with interests that are *aligned with (i.e., in harmony with)* those of the focal actor. The process of interessement often involves *negotiations* among the actors; however, the actors do not always participate in such negotiations themselves. *Speakers* or *representatives* may negotiate on their behalf. For example, an IT vendor can speak on behalf of an application system. It is not guaranteed, however, that actors will necessarily abide by the agreements signed off by their representatives. In many cases, actors fail to act as promised by their representatives. This phenomenon is referred to as *betrayal* [8].

If *interessement* is successful, then *enrollment* is said to occur. Enrollment involves a definition of roles of each of the actors in the newly created actor-network, such that the defined roles are aligned to the interest of the network. Since any enrollment is necessarily temporary, betrayal by an ally (i.e., enrolled actor), wherein it acts in contradiction to the interests it has agreed to support, is always a possibility.

Often, as part of the enrollment process, *inscription* occurs. Once an agreement between actors (i.e., enrollment) has been reached, the commitments need to be recorded into the shared memory of the social system (i.e., "stabilized") through inscription. Strategies for inscription in the context of computing include creation of texts (e.g., software manual) or technical artifacts (e.g., security systems). *Irreversibility* is another important concept and refers to the degree to which the sociotechnical system is incapable of going back to a point where alternative translation paths existed (e.g., [59]). The above discussion is summarized in Table 1.

The Case Study

Methodological Approach

BROADLY SPEAKING, WE USED THE INTERPRETIVE case study methodology (e.g., [49, 58, 60]) to guide the collection and analysis of data. We used the concepts of ANT for developing the theoretical sensitivity that would allow us to view the large volumes of data in a certain manner and to make sense of them (e.g., [42]). Data was collected primarily through multiple semistructured interviews with several organizational members at different levels and departments who had participated in (or had been affected by) the BPC initiative to different extents (see Table 2). The specific issues discussed in any interview depended on the role of the individual, the stage of the project, information learned from other stakeholders, and the extent of rapport that had developed between the interviewer and the particular interviewee. The formal,

Table 1. Working Definitions of Some of the Central Concepts of ANT

Concept	Definition
Actor	"Any element which bends space around itself, makes other elements dependent upon itself and translates their will into the language of its own" [9, p. 286].
Actor-network	"Heterogeneous network of aligned interests, including people, organizations and standards" [60, p. 42].
Punctualization	Treating a heterogeneous network as an individual actor to reduce network complexity [34].
Translation	The process of the alignment of the interests of a diverse set of actors with the interests of the focal actor [8, 59].
Problematization	The first moment of translation, during which a focal actor defines identities and interests of other actors that are consistent with its own interests, and establishes itself as an obligatory passage point (OPP), thus rendering itself indispensable [8].
Obligatory passage point	A situation that has to occur for all of the actors to be able to achieve their interests, as defined by the focal actor [8].
Interessement	The second moment of translation, which involves negotiating with actors to accept definition of the focal actor [8].
Enrollment	The third moment of translation, wherein other actors in the network accept (or get aligned to) interests defined for them by the focal actor [8].
Inscription	A process of creation of artifacts that would ensure the protection of certain interests [32].
Speaker/delegate/ representative	An actor that speaks on behalf of (or stands in for) other actors [8, 60].
Betrayal	A situation where actors do not abide by the agreements arising from the enrollment of their representatives [8].
Irreversibility	"Degree to which it is subsequently impossible to go back to a point where alternative possibilities exist" [60, p. 42].

Note: The reader is also referred to Latour [33] for an accessible but authoritative application of ANT in a study of sociotechnical complexities in a French initiative on urban transportation technology.

face-to-face interviews were conducted in some depth, and typically lasted between one and two hours. They attempted to capture *facts and emotional responses* of the interviewee to different aspects of BPC, and to *explore meanings jointly* with the interviewee [14, 51]. The other, informal interviews, including one conducted over the telephone, were for clarification purposes. The entire set of data was collected in the latter half of 1996.

Interpretive research can be conducted within a variety of traditions, and this has been noted in the literature by many scholars (e.g., [37]). For example, it is widely

Table 2. TELECO Interview Statistics

Interviewee	Type of interview	Number of formal interviews	Number of informal interviews
1. Vice president or process owner (1)	Formal with appointment	1	0
2. Vice president or process owner (2)	Formal with appointment, informal tour of facilities	1	1
3. BPC team member (1)	Formal with appointment, one informal telephone conversation	2	1
4. BPC team member (2)	Formal with appointment, one informal meeting	2	1
5. Marketing executive	Formal with appointment	1	0
6. Union executive vice president	Formal with appointment	1	0

Notes: Some of the interviewees occupied more than one position during the course of the study. BPC = business process change.

recognized that there are many types of ethnography, including the *realist* and *impressionist* genres, which are constructed and crafted with different ontological and epistemological commitments (e.g., [30, 56, 57]). Similarly, the hermeneutic interpretation may be conducted within a *validation* or a *philosophical* tradition, with drastically different views on the nature of texts, the role of the interpreter, and assumptions regarding truth (e.g., [52]). Even the more recently developed grounded theory methodology (e.g., [18]) has experienced tensions, with two significantly different traditions emerging—one focusing on *discovery* and the other sometimes viewed as *procedural and verificationist* [17]. Interpretive case studies draw on all of the three above-mentioned methodologies [58]. Thus, interpretive case researchers experience complexities of mixing elements from different methodologies, and also inherit dilemmas within each methodology [30], especially pertaining to assumptions regarding the nature of data and the nature of analysis. We thus believe it is important for us to clarify the genre of our interpretive work in this paper, partly shaped by our position regarding "reality" and partly by our conception of "interpretation."[3] Our work, consistent with the views of ANT proponents, does not adopt a position of realism ontologically, whether *natural realism* or *social realism* [9]. In other words, we view our data not as objective evidence supporting or falsifying an assertion but as texts and text analogues, whose meanings, when read hermeneutically, can go beyond the original intentions and meanings attributed by their sources (e.g., [44]). The "productive," "imaginative," and nonprocedural nature of interpretation (e.g., [2, 16, 43]) is highlighted by Hirsch when he states, "Every interpretation begins and ends in a guess, and no one has ever devised a method for making intelligent guesses" [31, p. 170]. Consistent with this perspective, our interpretation did not rely on systematic induction based on data drawn using a predetermined sampling strategy [2]. ANT served as

a "device of mind" [15] that enabled us to retrospectively interpret and elaborate on *texts* from TELECO, highlighting subtle aspects of the BPC phenomenon that may not have been adequately captured through atheoretical inductive methods (however data intensive). It is worth noting, however, that interpretive guesses are not presented as the final understanding without "validation"—that is, without resolving apparent anomalies and inconsistencies in the texts [13, 44, 48].

A Brief Description of the TELECO Situation

TELECO, based in a prominent city in the United States, is a telecommunications company, having approximately 3,500 employees in the year 1993. In response to the growing concerns regarding inevitable changes in the organization's external environment, wherein TELECO would be forced to compete with utilities, cable companies, and long-distance carriers for a large portion of its business, the president of the company, along with the vice presidents, initiated a BPC project. The first step was to hire a reputed consulting firm, and then assemble a BPC team. The team was given the task of redesigning "every process in the entire company" within one calendar year. The espoused objective of the BPC initiative was to radically enhance service, speed, quality, and value for customers. The BPC team studied the organization for several months and came up with an elaborate redesign. The redesign, developed using IT tools such as Visio and Microsoft Project, consisted of process maps along with detailed descriptions, human resource (HR) specifications, high-level technology specifications, and detailed schedules for employee layoffs. Some BPC team members used terminology such as "low-hanging fruit" to describe obvious candidates for layoff, and this evoked negative reactions from many employees. The final set of redesigned processes, according to a BPC team member, included "accounting, administrative services, business sales, HR, information services, maintenance, mass market services and fulfillment, operator directory services, planning, provisioning, repair," and "emerging services." With so many proposed process changes desired (each change requiring new IT), there were attempts in TELECO to prioritize the proposals. Unfortunately, BPC team members refused to eliminate many of the low-impact and expensive projects, largely because of their attachment to their own visions of the processes. The initiative scope thus remained rather broad.

In mid-1995, when implementation began, a number of employees were "retired" by the HR department even before the process-enabling IT that was to replace the employees was actually implemented. In addition, the attractive "retirement package" negotiated by the union and management to gain the support of employees for BPC prompted many employees, including those the company wanted to retain, to take voluntary retirement. During this time, TELECO failed to continue its operations in a satisfactory manner. As the organization was struggling to make a transition to its new redesigned form, the top management changed (i.e., the president retired and a new president took office) and abruptly abandoned the BPC plans, resulting in the initiative being seen as a failure.[4] The BPC initiative timeline is shown in Figure 1.

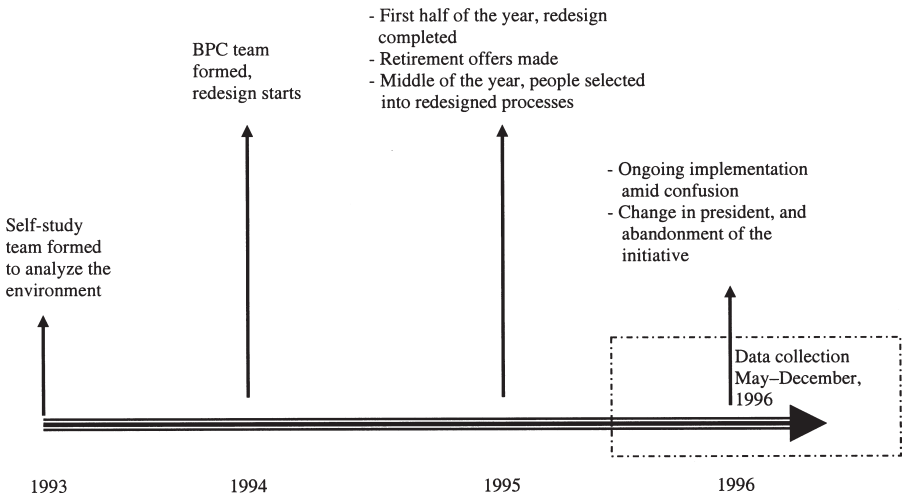

Figure 1. Timeline of the Initiative

An Interpretation of TELECO's BPC Initiative Using ANT

IN THIS SECTION, WE DRAW UPON ANT concepts described earlier and interpret the sequence of events before, during, and after the BPC initiative at TELECO as a process of creation, gradual expansion, and collapse of actor-networks. We focus on the actor-networks primarily *within* the organization, given the *centrality of these elements* in the BPC initiative.

The "Old" (Pre-BPC) TELECO Network

For many years, the quality of the business processes historically established at TELECO had been adequate to guarantee the company's existence and its economic success. From the ANT perspective, TELECO (prior to the BPC initiative) could be viewed as an actor-network consisting of, among others, top management, employees, the union, and technology, each having a taken-for-granted role within the company (see Figure 2).

The top management, although consisting of several individual actors (vice presidents and the president), appeared to be a tightly aligned network within the larger TELECO network, with the interest of ensuring the company's profitability and long-term viability.

Individual employees of TELECO constituted an important part of the old company's network. Consistent with the *relativity* tenet of ANT [34], the employees' interests were largely defined based on their positions with respect to a number of actors/networks—most notably, their company management, colleagues, policies, and so on. These interests were temporarily aligned with each other and with the rest of the TELECO network through a variety of compensation schemes, benefits, retirement packages, and job security guarantees. Interests of the union were traditionally aligned

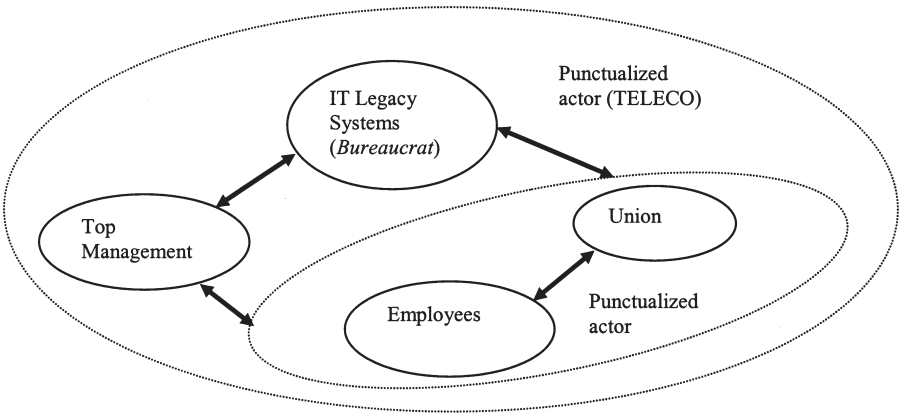

Figure 2. An ANT View of the "Pre-BPC" TELECO Network

with interests of individual employees. This resulted in their punctualization, with the union acting as the speaker of the employee-union actor-network. IT, consisting primarily of legacy systems, had an important role in TELECO and, thus, in ANT terms, it was an actor in its own right (see Figure 2). Its interests resembled those of a *bureaucrat,* a largely inflexible actor, enforcing existing rules often in the interest of control, ignoring needs of individual actors or even considerations of organizational efficiency/effectiveness [5].

Before the precipitation of the crisis leading to the BPC initiative, the different actors outlined above existed in a reasonably close alignment, and thereby allowed the company to be viewed as *one* coherent actor within the larger network constituting the business environment. Due to imminent changes in TELECO's competitive environment,[5] the company's top management anticipated that the position of this actor (TELECO) within the existing external network would be seriously threatened. The BPC initiative, defined in effect as the OPP by TELECO's top management, was thus seen as a desperate strategy for retaining their organization's competitive position.

In ANT terms, the implementation of the BPC initiative at TELECO can be treated as the process of enrollment of various actors within the organization into the network of supporters of the initiative. For the success of the BPC initiative, relevant actors had to be *enrolled in the network representing the envisioned post-BPC TELECO.* Not being able to assemble the post-BPC actor-network, where each important actor had passed through the OPP and was successfully enrolled and stabilized, would imply failure of the BPC initiative itself.

Creating the New Network—Problematization

In the face of the imminent changes in the business environment, the top management of TELECO sensed a threat to the organization's interests (profitability and long-term viability) and realized that they would have to make significant changes to the old

network in order to protect these interests.[6] A "self-study" team consisting of key employees/executives of the company was charged with the task of studying the environment and recommending possible course(s) of action. After a thorough analysis of the situation, the team came up with a report that was summarized by a director in TELECO as follows: "The whole telecommunications world is changing rapidly. . . . *What we need to do is reengineer our entire company.*"

Identification of the Relevant Actors

The realization of the top management that significant changes to the old network were necessary made it a seemingly easy target for enrollment to the notion of the "post-BPC" network (representing the future TELECO). At this point, the enrollment of the top management into the envisioned post-BPC network led to a misalignment of its interests from the rest of the existing actor-network constituents within TELECO. Within the post-BPC network being assembled, top management took on the role of the speaker—the most visible actor representing the emerging network. Further, top management assumed the responsibility of identifying and enrolling other key actors, and came to be seen as the *initiating* focal actor by us, the researchers.

As a first step, top management invited a few handpicked employees (internal experts) from TELECO, who were highly knowledgeable of various aspects of the company's business processes, to join the BPC team. Before joining the team, interests of these invited experts could best be defined by their position as employees in the pre-BPC TELECO network. In addition to the internal experts, the BPC team included employees of a leading consulting organization that the top management had hired to facilitate the entire BPC initiative.

Top management realized that other employees in the organization, represented by their union, needed to be enrolled to support the post-BPC network, either as actors in the post-BPC network or as actors who would pose no resistance to its formation (say, by "retiring" voluntarily rather than suing the company). Attempts were also made to enroll IT vendors (representing envisioned process-enabling systems) through the issuance of requests for proposals (RFPs) and awarding contracts. Notably, TELECO's top management as well as the BPC team viewed IT not as an actor in its own right with potential to pose resistance because of its interests but, rather, as a passive element that, when plugged in, would automatically enable new functionality in business processes. A BPC team member remembered what he felt during this stage: "They're expecting these things to *just boom happen.*"

Inadequate understanding of IT was evident in the way redesigns were developed. A BPC team member, for example, recalled how the envisioning process unfolded, with the capabilities of technology being taken for granted:

> You envision someone sitting at a desk knowing everything about a customer . . . you envision them pointing and clicking . . . and the next thing you know is the happy customer . . . you [have] a simplified order entry and it flows all the way through without having to touch anyone. . . . I did not know that [such technology existed] till I got involved in this.

Definition of the OPP

The next step in the problematization stage was to *define the OPP.* In the belief[7] that a radical change of all the key processes in the company was necessary for the interests of the post-BPC network to be satisfied, top management specified the BPC initiative to be the OPP for the new network. The definition of OPP was accomplished by implying the following in the communications with some of the stakeholders identified: if employees wanted to retain their long-term financial well-being; if the internal experts wanted to be viewed as key actors in the BPC initiative, gain valuable experience, and receive recognition; and if consultants and IT vendors wanted to enhance their reputation in the corporate world, enjoy financial success, and, most importantly, be retained by TELECO, they all had to pass through the OPP. Doing so would allow these employees to avoid the obstacles (e.g., threat of unemployment due to competition and organizational inefficiencies) that they would face in achieving their own interests (e.g., job security, professional success); however, in passing through the OPP, they would have to experience some inconvenience (e.g., having to subject themselves to the uncertainties and stress associated with BPC) due to the deviation from their current paths (see Figure 3). Similarly, the internal experts would have to put in extra hours to learn unknown methodologies, business processes, and tools, and be required to alienate many friends and colleagues whose jobs they would have to eliminate as part of the initiative. Consultants would have to modify their assumptions about BPC, methodologies, and tools. IT vendors would have to invest in mastering new technologies and in adapting their existing technologies/techniques as per TELECO's BPC requirements. They would also need to work under tight deadlines and possibly forego alternate and potentially less complex opportunities to serve other clients in the marketplace.

Creating the New Network—Interessement

The second step in translation involved convincing the actors to agree on the interests defined for them by TELECO's top management.

Implicit Negotiations with and the Enrollment of the BPC Concept

The first round of negotiations took place between the top management and the concept of BPC. While the concept was initially not recognized as an actor in the problematization stage, as interessement started, TELECO's top management realized that the concept of BPC (including promises, methodologies, and "best practices" associated with it) was critical to the successful formation of the post-BPC network. That is, a high degree of alignment needed to exist between the BPC concept and the actors in the post-BPC TELECO for them to obtain the benefits of the transformation initiative.

Given this realization, the focal actor also sought to devise interessement strategies to negotiate the relationship with the concept of BPC. Once top management had

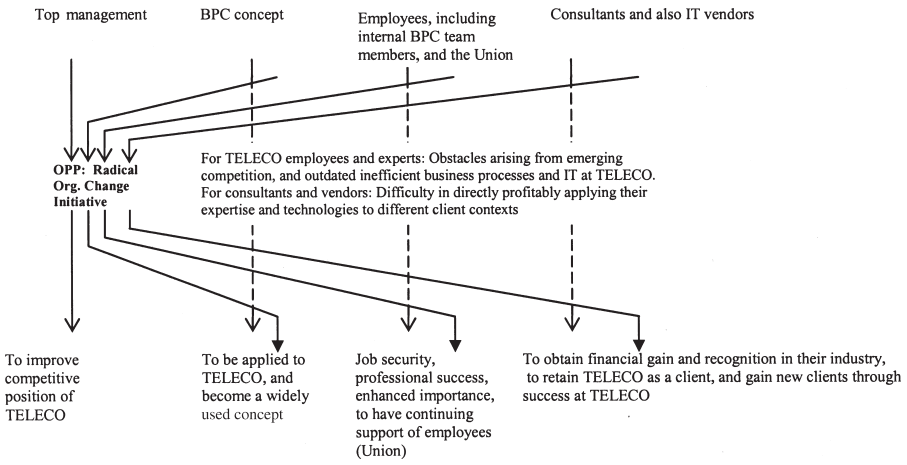

Figure 3. The OPP Providing Actors an Alternate Path to Avoid Obstacles (inspired by [8])

concluded that business processes at TELECO had to undergo drastic changes, the pro-BPC hype in the management community and the presumption of the advantages of the BPC approach touted by legitimate external actors (e.g., other leading organizations, leading consultants, scientific studies, and popular press) prompted top management to pursue the rapid enrollment of the BPC concept into the post-BPC TELECO network. The implied interessement, in this case, was the promise of BPC concept use in a prominent company (TELECO) and the financial/symbolic benefits to other networks (e.g., consultants) aligned to the BPC concept. Of course, in the process of being enrolled in the post-BPC network, the concept of BPC had to undergo significant stretching and modification. The idea of downsizing was included prominently in TELECO's definition of BPC, as per interests of the top management (the focal actor at this point), who had come to believe that cutting HR costs was key to the success of the BPC initiative. With the alignment of interests of the BPC concept and the interests of the post-BPC actor-network, a punctualized focal actor, represented by the top management, resulted. This actor, upon formation, had the interest of making TELECO more efficient and effective through the BPC initiative.

Negotiations with and the Enrollment of Members of the BPC Team

The second round of negotiations took place between the focal actor and the internal experts and consultants[8] who were invited to be on the BPC team. Top management, as speakers of the focal actor, sought to align the interests of the BPC team members with interests that they (i.e., the top management) had defined for the BPC team as part of problematization. A BPC team member explained how the consultants' interests came to be closely aligned with those of the top management: "you bring in consultants, and consultants' job is to have an objective view, which is fine . . . but even the consultants are being paid by the people [the top management]."

In addition, the top management, in their negotiations, tried to redefine the role of the internal experts (i.e., members in the pre-BPC TELECO actor-network) from being faithful to the existing processes/structure of the old TELECO to questioning every aspect of the existing TELECO (i.e., becoming enemies of the existing TELECO actor-network). In order to achieve this goal, they had to sufficiently weaken the ties between the experts and the old TELECO network, which, at this point, still included all other employees of the existing TELECO. Therefore, the top management employed a number of strategies to separate the BPC team members from their existing network [8], including physically placing them on the top floor of the corporate office away from other coworkers, bestowing them with "privileged" status, and restricting their communication with other employees. In the words of a BPC team member:

> Basically what they [the top management] did is to set up a group of people [away] from the rest of the organization . . . and a lot of what we were working on was extremely confidential in terms of the goals we were trying to achieve . . . and other employees would ask us questions about things that we couldn't really answer.

The swift enrollment of the team members led to their "disappearance" as individuals, and resulted in the emergence of the taken-for-granted entity, the BPC team, through the punctualization process. Given the instrumental role of the top management in creating the team, the interests of the BPC team were aligned with those of the top management. The BPC team members set off to redesign TELECO's business processes using BPC methodologies, in a manner mandated by the speakers of the post-BPC network (i.e., the top management). The enrollment of the BPC team into the new network can be seen as involving an inscription process [32], though, in this case, the interests of top management were inscribed not in a technical artifact but into a social body (i.e., the BPC team). As other actors in the environment recognized the position of the BPC team in the post-BPC network, it gained properties of irreversibility. That is, the BPC team, formed by assembling various individuals, became a punctualized actor with its own (i.e., inscribed) interests, quite independent of the inscribers (i.e., the top management), having the ability and willingness to define and change the actors around it according to these interests. Due to the close alignment between the *existing focal actor* (consisting of the top management and the concept of BPC) and the *BPC team* (consisting of the consultants and the internal experts), which was enrolled, all of these actors may be seen as forming a higher-level punctualized focal actor.

Negotiations with and the Enrollment of the IT Vendor

The focal actor understood the importance of IT in the BPC initiative during the redesign stage. One of the BPC team members articulated this understanding as "IT plays a huge, huge role in organizations." Another member who was taking stock of the IT requirements for the BPC initiative discovered that there were "130 items that were entire systems projects that these people [BPC team members] were expecting to happen to make their process come true." This prompted the team to initiate the

identification and selection of IT vendors who could provide the systems required to implement the visions within the scheduled dates. Standard company procedures (such as issuance of RFPs) were followed for vendor selection, though the focal actor had to bend this process in favor of awarding large contracts to TELESYS (a pseudonym), a "sister company." TELESYS appeared to have obtained entry to the post-BPC network not because it had satisfactorily aligned its interests with the focal actor's and *won* the contract on its merits, but because actor-networks external to TELECO coerced the focal actor to *concede* the contract to TELESYS. Thus, the stability of the enrollment of the key vendor (TELESYS) was questionable.

Negotiations with and the Enrollment of the Employees and Union

Employees were considered an important actor to be enrolled in the new BPC actor-network. However, their enrollment was complicated by the significant ties between the employees and the old TELECO network and the fact that the post-BPC actor-network was set to destroy (replace) the old TELECO actor-network. Economic ties between the employees and the existing organizational network were the most significant; therefore, the negotiations between the top management and the employees focused on proposing *economic incentives,* such as early retirement packages, for employees to accept the BPC initiative as the OPP, and act accordingly. This would ensure that employees who were retained would support the post-BPC network, and those who were "shown the door" would not oppose the post-BPC network, perhaps with lawsuits or strikes. The union acted as a representative for the employees during the negotiation process. It is useful to mention that the union was initially "left out in the cold" and this contributed to the enactment of a "battlefield" mentality, with the union engaging in hard negotiations to get the best deal from the top management. The executive vice president of the union explained:

> What we bargained with the company was the amount of incentives and . . . how it was going to be applied and different things like that. Primarily . . . we wanted to make sure they [employees] were getting a satisfactory amount. . . . I think we did a good job at that.

The results of the negotiations were inscribed as elaborate economic benefits into the layoff plans in return for employees' implicit promise to enroll in the post-BPC network.

Another strategy used by the focal actor (specifically, a BPC team member) to convince employees to accept BPC as their OPP was to appeal to their *professional pride* through, for example, the following words: "Stretch, go aggressive, reach for the stars, let us break our own mind-set."

In addition to the actors who were targets of *active* interessement, such as the employees, the focal actor had to deal with a number of actors who/that had been overlooked during the problematization stage and whose importance emerged as the translation process got under way. Interessement attempts proved to be less than effective where

- an actor was not recognized as such, due to its nonhuman nature, sometimes even after the "hidden" actor's interests were actively distorting the planned BPC processes (e.g., BPC tools); and
- the focal actor seemed to have a limited ability to adapt its negotiation strategies with respect to the emerging or initially unanticipated set of actors (e.g., senior executives).

Unplanned and Awkward Negotiations with BPC Tools

As a part of the adoption of the BPC methodology, process modeling and project management tools were brought in to assist in the redesign process without much forethought about the consequences. This was not surprising given the understanding of the focal actor that capabilities of the tools were inherently consistent with the goals of the BPC initiative. From our ANT-sensitized perspective, IT was not treated as an actor with the potential to exert influence on the BPC initiative that might be distinct from the BPC team's interests. If at all recognized, IT (including BPC tools) was presumed to have a socially constructed role of a passive "administrative assistant," an actor who could be unproblematically brought in to undertake simple "record keeping and dissemination of data" while being fully under the control of its users (i.e., the BPC team within the post-BPC network) and completely subordinate to their interests [5, p. 212]. However, tensions appeared in the relationship between the tools and the BPC team as the project progressed. The interests of BPC tools should have been aligned with those of the post-BPC concept and, thus, the BPC team members. However, the BPC tools, as a result of parallel micro-translation processes, developed an unanticipated alliance with top management, arguably the most powerful actor in the post-BPC network, and assumed a role that can best be characterized as a "manipulator." In this role, BPC tools were seen to "change . . . work processes in ways not intended or wished by its users [the BPC team members]" [5, p. 211]. The tools appeared to have been successful in convincing top management about their capabilities to (1) create attractive electronic texts that could be modified with ease and (2) enable top management to influence redesigns without actually engaging in the redesign process with the BPC team.

In this manipulative role, BPC tools changed the nature of relationships in the network and destabilized the alliances being formed systematically in support of the post-BPC vision. BPC tools promoted such destabilization in at least two ways: (1) by making it possible for top management to emphasize the *production* and *presentation* rather than the creative development of the diagrams and documents, and (2) by short-circuiting the participative process among the top management and the BPC team, and instead replacing it with a process reflecting a hierarchical relationship between the two actors [48]. As a BPC team member reported:

> A lot of these things were givens when I walked in the door . . . ideally, you document the existing situation, you sit up and brainstorm about how things might change, or how we might end up with a process, then you establish a vision. . . . *I did not sit in on any brainstorming session . . . I can tell you . . . at*

> *[this] point we were . . . put[ting] together presentations to present to all the . . . managers.* [emphasis added]

The top management often mandated unreasonable changes to the redesigns presented by the BPC team, and the BPC team silently complied with the top management's change directives.

The BPC team members found themselves engaged in the creation of unnecessarily elaborate and aesthetically pleasing documents for inclusion in "process binders." At this point, the BPC tools' apparent capabilities looked insufficient in terms of the highlighted expectations of the top management with respect to what the tools could produce. Thus, the BPC team members had to negotiate the capabilities of the tools for them to remain usable, as evident in the following statement made by a BPC team member: "We used Visio to create all the process flowcharts . . . and Project . . . we *really stretched its capabilities*" [emphasis added].

The stretching of tools and the creation of the fancy process binders wastefully consumed a great deal of time and money and reflected an unmanageable scope and unrealistic expectations [6, 36]. The entire process left some BPC team members with a sense of helplessness:

> The problem is, if you have a tool, *you become a slave to that tool.* . . . We spent too much time . . . producing those things. The business of producing and documenting was very cumbersome. . . . We refined the hell out of this thing. . . . It was ridiculous. [emphasis added]

One BPC team member described technologies (including the BPC tools) in TELECO as "kind of schizophrenic," reflecting his belief that they were just not under the control of the team.

In summary, the BPC tools, initially viewed as passive assistants, changed the relationships between key network elements (the top management and the BPC team) by developing certain new interests in the top management. In order to maintain the alignment with the top management, the BPC team members tried to stretch the capabilities of the tool, and although they were able to do so successfully to some extent, the tools ended up working against the interests of the BPC team, thereby taking on an active manipulative role rather than a passive aide's role.

Unplanned and Awkward Negotiations with Business Process–Enabling IT

IT was initially envisioned by the focal actor to play a *passive facilitative role* in enhancing communication and coordination among business functions in the post-BPC network. Thus, actions were not taken to consciously enroll IT. It was just assumed that the interests of IT would be automatically aligned with those of BPC in TELECO or, possibly, that IT could not have its own interests and could therefore be easily bent and stretched according to the new networks' interests.

The BPC team did implicitly attempt to *define* IT as part of the specifications in the reengineering plan. These definitions were very different from the preexisting

definitions of IT, largely dependent on other organizations where it had been implemented by its vendors. No existing software was available to accommodate the envisioned business processes at TELECO. Seen from the ANT standpoint, the available IT had an interest in serving different kinds of processes from those defined by the redesigners at TELECO. Thus, existing interests of the IT had to be translated into the interests of the post-BPC network for TELECO. The negotiation with the IT involved the development and adaptation of systems, with vendors of the new systems acting as their representatives. The process was complicated by the participation of such actors as plans and requirements that were not consistent with the existing capabilities of IT. Also, the focal actor did not have clarity in outlining what IT needed to do in order to pass through the OPP. A member of the top management later conceded that IT specifications "were too big, [and] not thought out enough." Without a clear OPP, it was natural that interessement strategies could not be conveyed to IT vendors, the representatives for IT.

Unplanned and Awkward Negotiations with Individual Senior Executives

As mentioned earlier, *individual* senior executives were initially presumed by all as having interests that were identical to those of the punctualized top management actor-network, in particular, and the post-BPC network overall. Thus, consistent with ANT scholars' warnings about the dangers arising from punctualization (e.g., [34]), the individual senior executives had "disappeared," and no efforts were made to undertake negotiations with the individual actors within the punctualized top management actor-network. As the BPC process progressed, it became evident that individual senior executives had developed interests that were not in alignment with those of the top management, the speakers of the post-BPC network. For example, while it was in the post-BPC TELECO's interests to eliminate all the unnecessary processes and the resources that were not adding substantial value (this included HR at all levels of the organization, including the upper echelons), the individual senior executives had vested interests in keeping these processes in order to ensure their own executive positions in the company. This was reported by the BPC team, which was acting as per interests inscribed in it initially by the top management but was experiencing frustration due to failing negotiations with individual senior executives regarding the appropriate nature of the post-BPC network:

> You come back with eight [redesigned] processes and they [the senior executives] say no . . . you got to have twelve. . . . Why? . . . Guess what. . . . Because there are 12 people [senior executives] I see on the sheet who need [process-owner] jobs.

Such negotiations tended to weaken the stability of the post-BPC network, which later contributed to its disintegration.

Creating the New Network—Enrollment

Did the top management, the focal actor that started translating the interests of other relevant actors, achieve enrollment of the actors in the post-BPC network? Even though the translation process had started well, and top management had successfully enrolled actors such as BPC team members initially, the overall enrollment process, assessed when the initiative was discontinued, can be judged as a "failure." A number of empirical observations support this evaluation. For example, while the BPC team members were successfully enrolled in the post-BPC TELECO network, in the later stages BPC team members experienced immense stress and dissatisfaction because ties between them and the old TELECO network were not fully eliminated.

> In about six weeks, I lost 16 pounds, and I can't afford to lose 15 pounds, and there was a tremendous stressful situation, and without naming names, there were many people who had nervous breakdowns during this. . . . We are talking about people's lives here.

The BPC team members still held positions in the old TELECO, and therefore they felt threatened when the turn came to "design-out" their own positions. As a BPC team member stated, for example: "I basically eliminated my position . . . which is a scary thought."

Individuals were also expected to simultaneously be enrolled in both pre- and post-BPC networks, given that there were no resources allocated for transition positions. Some employees seemed caught in the middle of the pre-BPC–post-BPC TELECO negotiations, and as a result, their enrollment into the post-BPC TELECO was disturbed. The experience was described using words such as "churn" and "gridlock" and expressions such as "building the [Boeing] 747 in flight."

Not helping matters was the fact that process-enabling IT betrayed the post-BPC network, by not doing what their representatives, the vendors, had promised.[9] In addition, the translation attempt by rearranging the elements of the pre-BPC TELECO network had negative consequences on its stability. Even with enormous resources spent, TELECO operations almost collapsed owing to lack of alignment among network elements (see Figure 4 for the intended "post-BPC" actor-network and Figure 5 for the actual "post-BPC" actor-network).

Clearly, the goal of improvement of TELECO's effectiveness and competitive position through the implementation of streamlined business processes and by enabling cross-functional coordination in the organization was not achieved. Further, the key actors, including the redesigners, employees, union, and the unsuccessfully deployed IT (through its representatives, the vendors), all came to experience the initiative as a painful and pointless exercise. To top it all, the president, a key ally of the post-BPC network, betrayed it by retiring during this time. The changing external conditions signaling that potential competitors would not enter TELECO's market, along with increasing demands for telecommunications services (e.g., the Internet), in turn, led the (new) president to betray the interests of the post-BPC network. He publicly de-

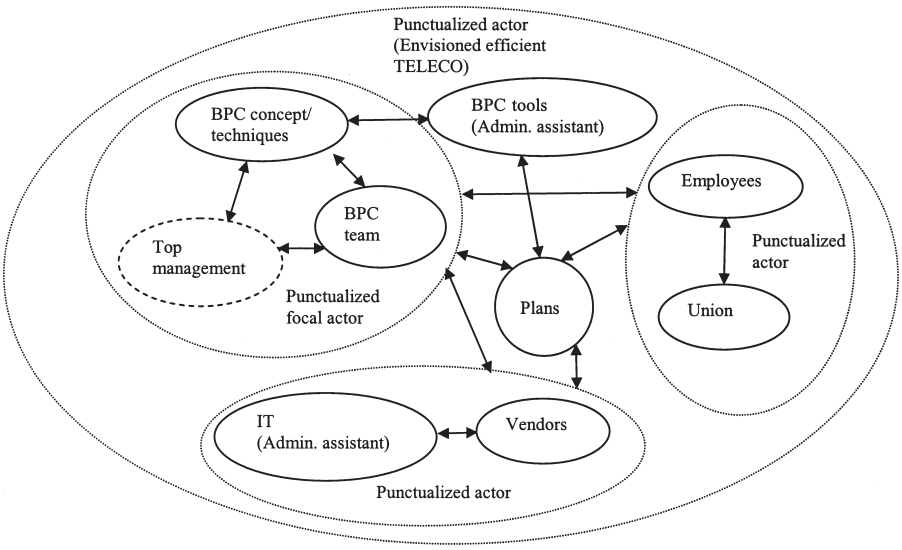

Figure 4. An ANT View of the Intended TELECO Network After the BPC Initiative

clared that the downsizing strategy inscribed in the BPC process binders was being abandoned and called for a growth strategy.

Discussion

IN THIS SECTION, WE RECAPITULATE AND REFLECT on issues that may have prevented the successful enrollment of important actors in the new actor-network corresponding to the post-BPC TELECO. These issues may be grouped into four categories that are partially overlapping—errors and omissions during problematization, limitations in the interessement strategies, complexities of enrollment, and problems related to post-enrollment (see Table 3). For each of these issues, we formulate statements capturing the essence of the ANT-informed interpretation of TELECO's situation.

Errors and Omissions During Problematization

During the problematization stage, TELECO's top management failed to recognize the existence and significance of a number of human/nonhuman actors that had the potential to influence the nature and outcome of translation to the post-BPC network. Examples of such actors are individual senior executives, process-enabling IT, and BPC tools.

The identification of actors that needed to be enrolled in the post-BPC network, such as individual senior executives, was not easy, due to the punctualization phenomenon [34], where the complexity of a network is hidden behind an identity of a seemingly atomic actor (e.g., the "top management") and the hidden actors (e.g.,

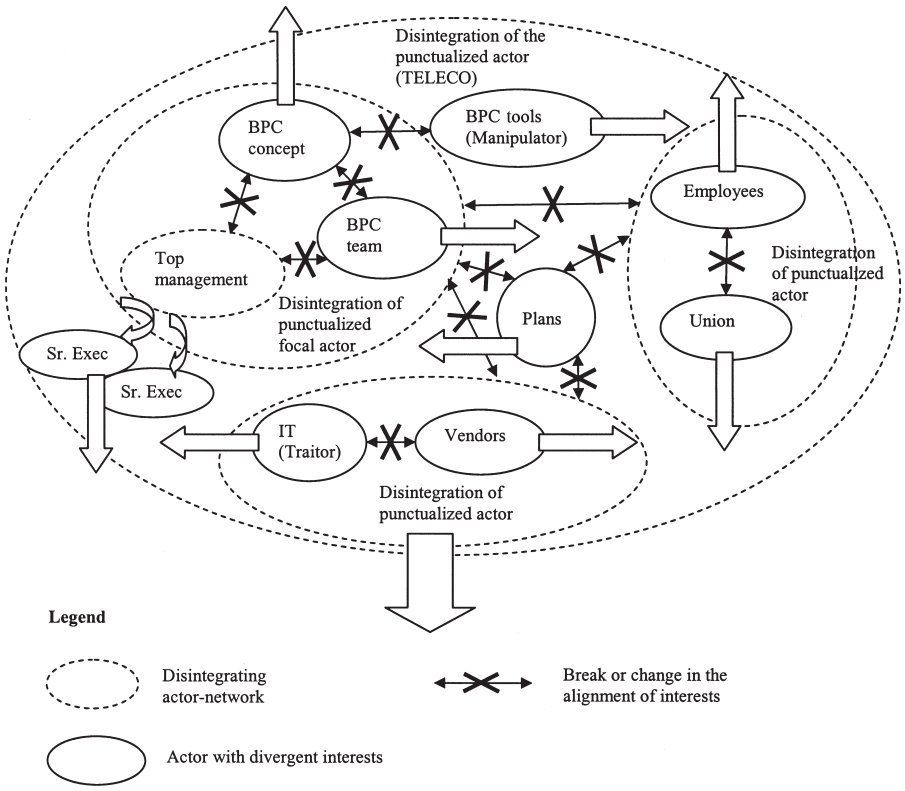

Figure 5. An ANT View of the Actual TELECO Network During/After the BPC Initiative

individual executives) emerge only when the stable network is disturbed during the enrollment attempt. The lack of recognition of the potential for disintegration of the top management, a punctualized actor, may have led to a faulty interessement process in the early stages of BPC wherein no effort was made to align the interests of individual executives with those of the BPC. Upon the disintegration of the top management actor-network, individual senior executives were found to be engaged in parallel translation strategies and in influencing the interests of other actors (e.g., BPC team) based on their own interests (and against the interests of the post-BPC network). In one particular case, as described earlier, the BPC team members were asked to go back to the drawing board and re-redesign the business processes. This was because the visions they had created as per the interests of top management (i.e., service, speed, quality, and value addition) were at the expense of the emergent interests of the individual senior executives (i.e., the vice presidents' survival in the company). Needless to say, the revised designs reflecting the interests of individual executives were not optimal for the post-BPC network; moreover, the BPC team members, who were members of a social body with interests of the top management inscribed, had to deal with the inconsistency of the interests of the post-BPC network and the interests

Table 3. Key Issues Regarding the TELECO BPC Initiative Highlighted by ANT

Reasons suggested by ANT	Elaboration with example(s)
Errors during the problematization stage	Not all relevant actors were adequately identified at this stage: • Due to punctualization, senior executives were not identified as actors. • Focus was primarily on human actors. • Nonhuman actors such as IT, which had significant roles within the BPC initiative, were not identified. It is important to realize that problematization is not a one-time activity but an ongoing process. Thus, as previously unanticipated actors come into view, attempts need to be made to recognize and enroll them.
Limitations in the interessement strategies	Interessement not carefully thought out: • No effort was made by top management to stop the use of alienating type of BPC-related vocabulary such as “low-hanging fruit” and “hatchet-in-the-head.” • Alienation of the reengineering team from the rest of the employees created a sense of secrecy, leading to suspicion in the minds of other employees and, hence, a lack of commitment to the initiative on their behalf.
Complexities of enrollment: failure to manage parallel translation processes at different levels of the social network	Actors and networks kept changing through the life of the project, with each one of them undergoing different translation processes, not necessarily in alignment with each other. • Early in the project, top management was able to form an aligned network with the reengineering team members and the BPC concept. However, later on, the senior executives (who made up the top management) found that their own individual interests were being compromised due to the BPC initiative, and they started to oppose any design that was not compatible with their own interests.

Postenrollment pitfalls: betrayal	A number of actors betrayed their representatives: • IT betrayed its representatives (the vendors) by failing to perform according to the specifications. • Employees betrayed their representatives (the union) by opportunistically taking advantage of the retirement packages. • Top management also betrayed the BPC initiative by abandoning the BPC initiative (i.e., the BPC team, the post-BPC network, etc.) suddenly.
Postenrollment pitfalls: irreversible inscription of interests	Artifacts generated by the BPC team proved irreversible, even though the inscriptions were no longer relevant at the time. • The initial layoff schedule for employees was drawn up with the assumption that the technology replacing them would be implemented by that time. However, even though the technology was far from implementation when the layoff dates arrived, the HR department acted as per the original schedule inscribed in the redesign document. This led to a collapse of company operations.
Postenrollment pitfalls: difficulties encountered in remaining aligned with weak competing networks	During the initiative, top management attempted to move actors from their old networks to the new “post-BPC network.” This move created a gridlock in the organization, because no individual could move to the new network until he or she had been replaced by another in the old network, and vice versa.

they were now serving, and this tension contributed to a gradual reduction in their commitment to the post-BPC network.

We would like to acknowledge here that in most BPC projects it is not possible for initiators/managers/leaders to a priori identify each and every stakeholder group and define their interests through the specification of an OPP. However, in our view, the chances of success of a BPC project can be improved by considering (and acting according to) the following abstractions:

> *A1: It is quite possible that hidden actors of potential significance (e.g., emergent "opponents" of the BPC project) exist within seemingly atomic punctualized actor-networks during, say, the initiation of the project. Thus, whenever possible, tactics for (a) identification of punctualized networks, (b) prevention of disintegration of the punctualized networks, (c) monitoring for signs of disintegration, and (d) developing contingency plans to deal with implications of the disintegration on the surrounding actor-networks should be formulated as part of project initiation.*

> *A2: Problematization is not a one-time activity to be undertaken only during the initiation phase of a BPC project; it should be treated as an ongoing process throughout the initiative as previously unanticipated actors come into view and need to be enrolled as allies of the initiative.*

Another critical aspect of managing BPC initiatives that the interpretation of TELECO events reveals is the fact that the top management did not entertain the possibility of IT (whether process-enabling IT or BPC tools) being actors in their own right, with interests not necessarily being aligned with their human speakers throughout the initiative. Such an omission is not uncommon, and two explanations are offered in the literature: (1) organizational members in managerial roles, often informed by "oversocialized" theoretical frameworks granting agency to humans alone (e.g., [41, p. 571]), tend to overlook nonhuman actors, including IT, and (2) organizational members in managerial roles tend to view humans as the least reliable elements in any network, and as having the potential to develop interests contradictory to those of the focal actor; thus, most attention needs to be directed toward the human actors [32].

We believe that the lack of awareness of the possibility that IT may be an important and active actor, with the ability to resist TELECO's BPC initiative, left the post-BPC network open to betrayal. With IT excluded in the problematization stage, the interessement strategies of "pouring money" were directed merely toward the vendors. There appeared to be minimal effort expended by the focal actors to specify in detail the acceptable behavior of the technologies, or to monitor, on an ongoing basis as the systems were being developed, if the technologies' emergent behaviors were consistent with their implicitly ascribed administrative assistants' role. As a vice president later reflected:

> A lot of the restructure or redesign was dependent on the major systems . . . coming to fruition. We have found that almost every single one of those are well behind schedule. . . . *Some people might say that you could just pour money*

> *into IT solutions and you can get those implemented. We feel that we have poured money into them and they don't seem to work*. . . . I don't know if there was an overreliance on IT . . . versus . . . really looking at the process management approach. [emphasis added]

Similarly, the focal actors of the TELECO initiative introduced BPC tools without imagining that the tools would actively mediate the relationships among actors (e.g., the BPC team and top management) in the network and take on the role of a "manipulator."

Based on the above discussion, and also suggestions in the literature about the ability of technologies to enact interests inscribed in them, we suggest another guideline for problematization that can potentially enhance the chances of BPC success:

> *A3: Problematization should be undertaken not only for human actors but also for nonhuman artifacts, especially for IT, which often plays a key role in BPC initiatives.*

Limitations of the Interessement Strategy

As mentioned earlier, interessement refers to the development of rationale and incentives that would help convince other actors to become allies of the focal actor—in our case, the top management (initially). Even though top management had identified employees as an important actor early on, the interessement strategies used with employees were not carefully thought through. Noting the importance of economic ties between the employees and the pre-BPC TELECO, top management sought to use *economic* incentives *alone* in convincing employees to not pose resistance to the initiative, neglecting the strong *social* ties that the employees had with the network. This was evident in the fact that top management's communication remained almost exclusively focused on convincing the union, the employees' representatives, that the economic interests of the employees were being preserved to the extent possible (with very favorable "retirement packages") while there was no attempt to address the employees' anxiety and suspicion that was developing in the early stages of the initiative. Further, there was no evidence of top management attempting to control the use of alienating vocabulary by the BPC team members. For example, during the redesign phase of the project, terminology being used by the BPC team included referring to some employees using disrespectful metaphors such as "low-hanging fruit" to be plucked out (i.e., employees to be eliminated from the organization with ease), or "quick hits" where, in the words of a reflective BPC team member, "what we were 'hitting' was people [i.e., the employees]." In addition, downsizing of unproductive employees who were identified as part of the BPC initiative was being publicly described by some BPC team members in disgustingly graphic terms (e.g., "if somebody has a hatchet in their head, pull it out"). Such inattention of the BPC team and the top management to the social interests of employees contributed to their alienation from the post-BPC network-in-creation, thus working against their effective interessement.

Another issue that worked against convincing the employees to align their interests with BPC was related to the top management's interessement strategies of weakening the BPC team's links to the existing network. The strategies included giving the BPC team a "privileged" status, relocating the team to the top floor of the corporate building, and also requiring the BPC team not to share any information regarding the initiative with other employees, some of whom were their former (even close) colleagues. While isolating the BPC team members may have been effective in weakening their ties with the pre-BPC TELECO network, the shroud of secrecy arising from the team members' inability to share details of BPC with other employees caused a weakening of employees' trust, thereby acting as a negative interessement strategy. A BPC team member described the situation as follows: "other employees would ask us questions about things that we couldn't really answer . . . so then mistrust started developing . . . there is some [hidden] agenda."

This "mistrust" and suspicion regarding a hidden agenda may well have contributed to the eventual betrayal by employees of BPC interests, agreed upon by the employees' representatives. Based on the above, we suggest the following guidelines for interessement that can potentially enhance the chances of BPC success:

A4: It is necessary to recognize the fact that BPC-related actors' interests are multidimensional (e.g., economic as well as social), even though one may be more salient. The interessement strategy must encompass all the relevant dimensions of the interests, not just the most salient.

A5: In a BPC initiative, an interessement strategy directed solely toward representatives of relevant actors or actor-networks is inherently risky, because representatives do not necessarily represent all aspects of the interests of their constituents. Moreover, the relationships between the representatives and their constituents are always subject to change and renegotiation, and thus, agreements made by representatives may not necessarily be adhered to by the constituents at a later point in time.

Complexities of Enrollment

The source of one of the problems experienced during enrollment was the fact that the definition (and thus the interests) of the actor(s) spearheading the BPC initiative continued to vary through the life of the project. For example, the top management started the project and, soon after, successfully enrolled the BPC concept and the BPC team members, and were punctualized, thereby functioning as one actor for the first few months in the project. In this period, in effect, the focal actor was not just the top management but an alliance of the top management, BPC, and the BPC team members. However, as the initiative progressed, the network of near-perfect alliances started to disintegrate—the senior executives who made up top management came to realize that their own interests were different from those being pursued by the alliance enrolled by the top management. The fact that senior executives came to have interests that were different from those of the top management led them (i.e., senior

executives) to initiate their own translation processes. Senior executives used interessement strategy of rejecting redesigns proposed by the BPC team when they discovered that the redesigns were not compatible with their own personal interests, although they were compatible with interests of the top management.

The dangers of parallel attempts of enrollment are apparent in other areas as well. For example, some of the BPC team members who had proposed redesigns aggressively engaged in interessement of top management to ensure that the redesigns created by them were picked for implementation, even though it was not consistent with the predefined interests of BPC. Similarly, business process modeling tools appeared to have convinced TELECO's top management that the BPC team needed to create voluminous and attractive documents ("process binders"). The creation of elaborate process binders did not serve the interests of the post-BPC network, since this activity became an unproductive waste of the BPC team members' time, and their focus shifted from *redesigning* to the *production/presentation* of documents [48]. With different actors attempting to translate other actors' interests in different directions, it became increasingly difficult to align the entire network toward the interests of the post-BPC network, related to the OPP that all actors needed to pass through. It is worth noting that Monteiro [40] states that the winner in this "sociotechnical negotiation" or tug-of-war is not necessarily the actor that has the best technical solution to the problem but, rather, the actor that can mobilize maximum support in its favor. By not consciously mobilizing support from as many actors (including those pursuing parallel translations) as possible throughout the initiative, top management made the BPC project vulnerable to failure. The above discussion may be summarized as follows:

> *A6: It is more than likely that different network elements in an actor-network involved in BPC are pursuing strategies for enrolling actors into an alliance that serves interests that may not be consistent with those of the focal actor. Thus, the focal actor needs to be aware of parallel enrollment attempts at different levels in the network, devise strategies to block or counter their effects, and mobilize the support of as many significant actors/actor-networks as possible.*

Postenrollment Pitfalls

Betrayal

As discussed earlier, betrayal occurs when actors do not act in accordance with the prior commitments made, either by themselves or on their behalf by their representatives. Betrayal can lead to a failure of a translation process [8]. We consider three illustrative instances of betrayal in the TELECO BPC case: (1) IT betraying its representative, the vendors; (2) employees betraying their representative, the union; and (3) the top management betraying the BPC initiative.

We recall that there was a round of negotiations between the post-BPC network and vendors who spoke on behalf of IT and made promises related to the performance of the technology. As the first modules of the IT were delivered, it became clear to other actors that IT would not perform according to specifications and would

require further customization. This amounted to a betrayal of IT's representative, the vendors, who had promised to make technology work in a certain manner. One possible way by which the focal actors may have prevented such a betrayal is by anticipating the reactions of the network elements to be translated in light of the applicable historical context [34]. It is well known that systems often do not perform according to expectations of the clients [35]. Appropriate representatives for the post-BPC network, whether the top management or the BPC team, should have considered the possibility of nonperformance by the systems earlier, and should have sought to align the systems' interests actively from the very beginning of the project, rather than discover the betrayal at the last moment. Another explanation for the betrayal, suggested by Law [34], is the fact that the interests that were defined for the software were not clearly inscribed in durable material (i.e., written specification document). Interviews with organizational members revealed that sufficient attention was not directed to the above issues because of the lack of technical expertise of BPC team members in charge of envisioning business processes. For example, a BPC team member remarked: "IT was an afterthought . . . the people on all these teams [redesigning processes] . . . [had] no particular knowledge or deep understanding of IT."

This lack of understanding of the capabilities and limitations of IT and its potential influence on the post-BPC network led to the creation of systems requirements documents that were superficial and open-ended. Reflecting on the betrayal by IT, a vice president said: "I think vendors were only spoken to at a high level . . . [and not given] the complexity of the systems environment in which we operate."

Further, because IT itself was not seen as a potent actor in its own right—just a passive assistant—the possibility of IT acting as a "traitor" [26, p. 188], by not performing according to the promises of the vendors, its representative, was overlooked. The lack of anticipation is indicated by the fact that penalties for nonperformance and contingency plans were not significant parts of the negotiation.

The second instance of betrayal is associated with the representation of the employees' interests by the union. When trying to enroll employees to the post-BPC TELECO network, top management negotiated conditions of such enrollment. According to the agreement achieved between the top management and employees (represented by the union), they (i.e., the employees) were expected to support the BPC process if their financial security was guaranteed. However, employees betrayed their representative (the union) and, transitively, the post-BPC network. They withdrew their support of the BPC initiative by opportunistically taking advantage of early retirement and leaving the company. A vice president reported: "We had retirement incentives that [were] so lucrative that we lost way more than we thought we'd lose. . . . We lost a tremendous amount of our top craft. I am going to guess close to 40 percent of our top craft."

Again, the lack of anticipation of such behaviors of a network element (the employees) that had been aligned with its representative (the union), along with the lack of inscriptions (say, in the form of well-designed contracts) constraining individual employees' actions, contributed to the betrayal.

Finally, the most serious case of betrayal was experienced when there were significant changes in the top management. Suddenly, without much prior notice, TELECO's top management betrayed the interests of BPC, with the new president declaring (in the words of a BPC team member), "No more anything on this reengineering project. We are no more doing anything that the process owner binder says," thereby indicating to other actors that the BPC initiative was no more the OPP. The sudden betrayal of BPC plunged the organization into confusion, with some translation processes continuing in line with irreversible BPC interests inscribed in the process binders, while the new top management was attempting to realign the interests of actors to its own interest of promoting corporate growth rather than downsizing.

A7: Any alignment of interests achieved through enrollment during a BPC initiative should be considered temporary. Thus, the focal actor building an alliance should be vigilant about shifting interests of actors that have already been enrolled, possibly as a result of disintegration of punctualized actors. Further, wherever possible, agreements made by the enrolled actors should be inscribed in detail on durable material to provide greater stability to the network of allies being assembled.

Irreversibility of Inscribed Interests

Within the ANT perspective, the plans prepared by the BPC team may be seen as artifacts enrolled to support the post-BPC network, with the BPC team's interests (at a certain point in time) inscribed in them. A significant and arguably unanticipated problem in the BPC initiative was experienced due to the irreversibility of these inscribed interests. For example, the BPC team members prepared layoff schedules of employees with the implied assumption that the process-enabling technologies would be implemented by a certain time. Yet, when the layoff dates arrived, and technology had not been implemented, the HR department (encouraged by senior executives pursuing their own interests of downsizing of employees and self-preservation) complied with the layoff dates specified in the redesign documents. In other words, the layoff schedules had gained the property of irreversibility, and were translating actors (i.e., HR department) toward the plans' own interests—that is, interests that the BPC team had earlier inscribed, but currently saw as inapplicable. One of the BPC team members observed: "You cannot go to a binder that, in some cases, is now over two years old and say . . . I'm going to implement this. Those assumptions may not be valid."

Similar implications of irreversibility were also experienced with respect to the interests of the post-BPC network that had been inscribed into the BPC team by the top management. The BPC team continued acting toward these interests: (1) even after the legal and economic conditions that had prompted the initiation of the radical IT-enabled change initiative had changed; and (2) even though the top management had disintegrated and key members of the top management, such as the president, had left the organization. This leads us to the following abstraction:

A8: Interests inscribed in human and nonhuman actors as part of the enrollment process in the BPC initiative tend to have properties of irreversibility. The consequence is that the enrolled individuals, social bodies, documents, technologies, and so on continue to serve the interests inscribed in them even after the interests have ceased to be relevant to the initiative or to the enrolling actor.

Actors' Difficulties in Remaining Aligned to Interests of Competing Networks

With the initiation of BPC, as the creation of a new actor-network began, the senior executives (supported by the BPC team) started removing actors from their positions in the old network and recruiting some of these actors into the new network. This caused a "gridlock" in the organization, and was described by a BPC team member as follows:

> People kind of had to continue their old stuff until they could be freed up. . . . It's like, I can't leave to go to my new job until a person comes to replace me. And then that person says I can't come to replace you until this person comes to replace me. It just kept going around like this, and nobody could move.

The point here is that the representatives of the post-BPC network failed to realize that actors they enrolled experienced great difficulty in simultaneously serving the competing interests of the weakened pre-BPC as well as the emerging post-BPC networks.

A9: For a BPC initiative to be successful, it is necessary to ensure that actors enrolled in a post-BPC network are not simultaneously attached to the pre-BPC network, because the competing interests of the two networks tend to reduce the stability of both networks.

Broader Implications and Conclusion

ANT PROPONENTS HAVE, IN GENERAL, INSISTED that *description* of events using ANT vocabulary is no less valuable than abstractions. Nevertheless, following the lead of some ANT scholars in organization studies (e.g., [41]) and BPC scholars (e.g., [53, 54]), in the previous section, we have attempted to articulate proposition-like statements codifying *specific* ANT-based knowledge on BPC. In this section, we revisit some of the *broader* implications.

A unique aspect of ANT is that it does not conceptualize networks as "associations between relatively stable and unproblematic entities, allowing researchers to comfortably concentrate on the nature of links between these entities"; rather, entities themselves are viewed as having "variable content and variable geometry" [3, p. 80]. An ANT-informed interpretation of BPC or other sociotechnical phenomena presumes that social bodies, their actions, and functioning technologies are *effects,* not given a priori facts or invariant determinants of other facts (e.g., [3]). In the interpretive study of TELECO presented, we see how the role of IT, the interests of actors (e.g., the top

management executives, the BPC team members, and other employees), and the definitions of BPC techniques and principles being enacted turned out to be *temporally varying emergent effects* of the sociotechnical process of translation, not stable irrefutable empirical realities.

We now discuss some of the implications of this study with respect to the factors (e.g., leadership, communication, and IT) commonly associated with BPC initiative outcomes [6, 23, 25, 45, 47]. The goal here is not to show that ANT replaces prior knowledge pertaining to factors discussed in the literature and the processes surrounding them; rather, it is to highlight how an ANT-informed analysis may add to our knowledge surrounding many of the factors.

In the literature, the high priests of BPC refer to leadership as the "primary ingredient" for success [25, p. 34]. A key finding of many research studies is that "senior management commitment and sponsorship" is a precondition for the success of BPC initiatives (e.g., [6]). On a related note, another commonly noted factor described as a precondition is the need for shared "vision" by senior management (e.g., [10, 22, 46]). In addition, almost all studies of BPC emphasize the critical importance of "communication." Hammer and Stanton, for example, state that communication must be "relentless," "simple," and "dramatic" [25, p. 47]. ANT-informed description adds to the understanding by suggesting why and when and within what limits these factors may become relevant.

The existing literature conceptualizes senior management as an invariant entity that needs to lend active support to the initiative, providing little insight as to what exactly its role is as a sponsor, and why the commitment may falter over time. ANT suggests that top management's role is to (re)define interests of human and nonhuman elements in the organization consistent with those of the initiative. The notion of punctualization and betrayal further warn us that the set of stakeholders of an initiative is always in flux, as actor-networks unite and disintegrate to serve the sponsored interests or competing parallel interests. Thus, the terms *commitment* and *sponsorship* take on a new meaning that points to the importance of monitoring relevant actors and keeping them on board, through the use of interessement strategies that may have to be dynamically formulated. The complexity of the process is further revealed by the distinct possibility that top management itself could disintegrate, disengage from its espoused interests, and renegotiate its relationship with other key actors. On similar lines, the idea of sharing vision often implies that top managers need to make their a priori views regarding the goals of an initiative known to all employees [25]. ANT, with its emphasis on self-interests of actors, suggests that it is not just the sharing of a vision by leadership that is important but it is also a linking of the global vision to the interests of actors (creating the OPP) and convincing them that their passage through the OPP is the only viable option for achieving their own long-term goals. Further, ANT indicates that the vision of the focal actor may change as the position of the focal actor in the network shifts. Finally, the emphasis in the literature on the extent of communication, suggesting a continuous outward projection of the objectives of an initiative, is arguably incomplete and of limited use. Our ANT interpretation suggests that each of the three phases of translation demands

different approaches to communication. During the problematization phase, the communication needs to be focused on understanding who the relevant actors are and what their interests may be—this communication process is primarily diagnostic and, thus, is directed inward. Once the OPP has been formulated, the definition of interests of various actors will require intense outward communication, establishing the central role of the focal actor in the initiative and in determining the future of the other actors. Interessement stage communication would be directed toward convincing the actors, and blocking out alternate competing messages from other actors in the network initiating parallel interessement processes. A notable lesson learned from the TELECO case study pertaining to interessement is that communicating exclusively with relevant actors' representatives has great potential pitfalls, because the relationships between an actor and its representative is always subject to change. Communication during (and after) enrollment is directed toward stabilization of the new relationship through inscription in a medium with some permanence, such as documents and software. Beyond that, in the postenrollment stage, the focal actor needs to monitor the actor-network to ensure that successfully enrolled actors that may have become dysfunctional due to changes in the surrounding network not remain irreversible but, instead, be reproblematized, reconvinced, and then reenrolled.

With respect to IT, the literature highlights the importance of knowledge of its capabilities [4, 21]. IT is discussed as a critical enabler, with "automational," "informational," and "disintermediating" effects (e.g., [11, p. 51]). In general, the literature either presents a technologically deterministic point of view, wherein IT is posited as the cause for change, or a socially deterministic view, wherein the role of IT is completely marginalized [41], thereby painting a one-sided picture of IT. ANT, on the other hand, highlights the unanticipated, unintended, and often active roles of IT that mutually change human and other nonhuman actors [38]. It is worth noting that the purpose of seeing IT as actors in their own right is not to "give them life or a mind of their own" [5, p. 209] but to make explicit the roles (e.g., manipulator, bureaucrat, administrative assistant, and traitor) enacted by IT that cannot be fully explained by stable material properties of the technology or by the intention of the human agent seeking to instrumentally use IT to further a preexisting interest [5, 26].

In closing, we reiterate our position that ANT provides but one plausible understanding of events, consistent with the character of many interpretive studies. No claim is made (or needs to be made) regarding this paper providing the most "correct" interpretation [13]. Indeed, our goal was not to generate an account characterized as *the truth* about what happened in TELECO and to inductively derive the causes. Rather, we sought to provide a "valid" reading of text and text analogues (i.e., human behavior), thereby contributing to the ongoing hermeneutic activity that our community is engaged in to better understand sociotechnical complexities associated with BPC (e.g., [48]). This is consistent with the spirit of ANT, which seeks to open up rather than close off a knowledge arena by revisiting taken-for-granted ideas about humans and nonhumans in organizations and the changing nature of linkages among them.

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NOTES

1. A number of terms with similar, though not necessarily identical, meanings have been used in the literature, including reengineering, business process reengineering (BPR), business process redesign, process innovation, process transformation, and so on. We believe that the term *BPC,* introduced by leading scholars in this area [20], is more inclusive, and avoids the negative connotations of some of the earlier-used terms such as *BPR.*

2. We use the term *analyst* broadly to refer to any individual attempting to develop an understanding of a particular network. Thus, for example, the analyst could be an academic performing a formal theoretical analysis of an actor-network or a human actor embedded within the actor-network, enacting his or her everyday sociological understanding.

3. Here, *interpretation* refers to the nature of interaction between the data and the theory in a study. This could involve induction, deduction, or elaboration sensitized by a conceptual lens.

4. Refer to Sarker and Lee [45] for a more detailed but atheoretical case description.

5. Top management feared that the telecommunications industry would become unregulated in the very near future, prompting the entry of new actors, such as the cable operators, into the industry who could offer better service at significantly lower costs.

6. At this time, the company's (i.e., pre-BPC TELECO's) interests were similar to those of the top management. In fact, the company may be seen as a single punctualized actor-network of aligned interests "spoken for" by the top management.

7. This belief was a result of (1) top management exposure to the promises/potential of BPC from seminars, popular press, and so on, and (2) the report of the "self-study team," which saw reengineering as the only way to remain competitive.

8. In the interest of brevity, we consider negotiation with all members of the BPC teams, whether internal or external, in this subsection.

9. Of course, alternate interpretations for the nonperformance of IT exist. For example, could the situation we describe as "betrayal" by IT be attributed to opportunistic behavior on the part of the vendors, who were motivated by short-term financial benefits, without any concern for successful delivery? Could the vendor salespeople be acting opportunistically in promising the client (TELECO) functionality that they knew could not be inscribed into the software by their developers? While we are not in a position to deny these (or other) possibilities, considering the reputation of the consulting organizations and the vendors involved in the BPC initiative, and the prestige/visibility of working for a client such as TELECO, we feel that the most plausible interpretation is that the vendors were just not able to make IT perform as promised.

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