

# When Truces Collapse: A Longitudinal Study of Price-Adjustment Routines

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We analyze the microfoundations of the routine in a study of price-adjustment processes at a manufacturing firm. Existing theory says that truces balance cognitive and motivational differences across functions, but there is scant evidence on how truces work. We show both stability and change in routines. For minor price adjustments, routines incorporate truces in stable but separate market interpretations by the sales and marketing groups. Major price changes put truces at risk, as latent conflict over information and interests becomes overt. The ensuing battle shows how interests, information, and truces are intertwined in performing the routine. Routines are not just stable entities, but adaptive performances that include conflict. We illustrate how our approach addresses fundamental problems such as how firms perform economics, how routines incorporate economic theory, and how routines shape macroeconomic dynamics. We argue that our approach can be extended to any routine-based organizational work.

*Key words:* organizational routines; truces; evolutionary theory; economic theory; price adjustment

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What is the role of the organizational routine? One approach focuses on the cognitive or informational role of the routine. For instance, in the evolutionary theory of the firm (Nelson and Winter 1982), organizational knowledge resides in the routine (Argote and Darr 2000). Routines are “performance programs” (March and Simon 1958)—activity sets that should be performed predictably. Routines also serve as replicable targets for firm behavior (Nelson and Winter 1982, Szulanski 2000). This cognitive dimension has been enormously important to evolutionary economics and strategy research, which both presume that routines are selected by exogenous forces. Routines explain persistent performance differences in relatively similar firms (Gibbons 2006). They also serve as “the building blocks of capabilities” (Dosi et al. 2000), as they encode knowledge and coordinate skills that executives manage to maintain firm capabilities (Helfat et al. 2007).

A second approach to organizational routines addresses the motivational role of the routine (Nelson and Winter 1982, Gibbons 2006). Routines define organizational tasks and thereby aid in coordinating across different functions, but functional differences can create problems of individual incentives, vested interests, and influence (Milgrom and Roberts 1988, Rotemberg and Saloner 1995, Gibbons 1999). Functional differences may also lead to jurisdictional battles (Dougherty 1992, Bechky 2003a) as groups fight for control. Yet problems of decision making, conflicting interests, and cooperation are largely absent from the literature on

routine-based behavior, which favors the cognitive role of routines (Gavetti et al. 2007).

One important exception to this absence is the “routine as truce,” a metaphor introduced by Nelson and Winter (1982, pp. 107–112) to redress an overly cognitive approach to routines, balancing that approach with motivational aspects. Recently, several scholars have used the metaphor to address the political and motivational aspects of routines (Burns 2000, Mangolte 2000, Lazaric and Raybaut 2005, Pentland and Feldman 2005, Gibbons 2006). The approach allows that power relations might be relevant to routines and draws attention to the internal dynamics of routines, which can be a source of endogenous change (Feldman and Pentland 2003, Howard-Grenville 2005, Rerup and Feldman 2010). The metaphor of truce implies a resolution to conflict, though. It does not show how divergent interests and conflict yield change. To move beyond the metaphor, we need a means to address “the extent and stability of truces in relation to particular routines” (Pentland and Feldman 2005, p. 809).

Here, we pursue such a theory of truces in a study of price-adjustment routines. Price adjustment offers an ideal setting for the study of routines. First, the problem of price adjustment is at the heart of early work on routines: both the behavioral (Cyert and March 1963) and evolutionary (Nelson and Winter 1982) theories of the firm set their work in the context of price adjustment. Second, price adjustment invokes both exogenous and endogenous forces. Price invokes the market forces that

exert external selection pressures, but price adjustment also invokes endogenous change in adapting how firm members understand and interpret the market.

We find two kinds of price changes. Small price changes proceed through routines as truces that permit stable, but separate, market interpretations by the sales and marketing groups. Large price changes put truces at risk, as latent conflict over information and interests becomes overt. In the ensuing battle, we observe the collapse and re-forming of truces. Our approach allows us to address both stability and change in routines, showing how interests, information, and truces are intertwined in performing the routine. We study pricing, so we demonstrate implications for the performance of economics in organizations, showing how the routine is at the heart of the price system. Yet our approach can be applied wherever routine-based work requires endogenous organizational change.

### Theoretical Background

The routine has a rich tradition at both the individual (Cohen 2007) and the organizational level (Gavetti et al. 2007), but much of the contemporary literature treats the routine as a black box (Feldman and Pentland 2008). One reason is that theories of routines are rooted primarily in evolutionary theory. As Winter notes (in Cohen et al. 1996, p. 662), theorizing about routines begins with the question “What does an evolutionary theory really require of firm behavior if its basic evolutionary logic is to track?” Thus the idea of the routine as a stable response to selection forces always underpins even discussions of internal change processes. For example, the routine as truce was intended to balance an entirely cognitive notion of routines with one that introduced problems of motivation and conflict. Yet consider the following illustration from the evolutionary theory of the firm:

When one considers routine operation as the basis of organizational memory, one is led to expect to find routines patterned in ways that reflect characteristics of the information storage problem that they solve. When one considers routine operation as involving a truce in intra-organizational conflict, one is led to expect routines to be patterned in ways that reflect features of the underlying problem of diverging individual member interests. (Nelson and Winter 1982, pp. 110–111)

This statement incorporates divergent information and interests, both problems of microlevel adaptation, but it also shifts the focus away from the routine as adaptive process to the routine as solution, leaving us with an image of the routine as both structural and static (Feldman 2000, Cohen 2007).

To move beyond these limits, we must address three theoretical problems. The first is the theoretical basis from which we consider routines. Evolutionary theory

favors selection as the theoretical ground, so adaptation refers to outcome, not process. Yet although selection forces can shape routines, organizational adaptation requires some interpretation of the environment. If, for example, truces resolve information problems (Nelson and Winter 1982, Gibbons 2006), then adaptation should involve problem solving, learning, and conflict in updating information (March 1981). Moreover, routines create conflict over roles (Barley 1986) and jurisdiction (Bechky 2003a). To understand stability and change, we need to consider these dynamics.

The second theoretical problem is definitional: What do we mean by routines? Evolutionary theory requires a “quasi-genetic trait” (Cohen et al. 1996, p. 662), so the dominant approach treats routines as analogous to skills (Nelson and Winter 1982) such that information processing is either “highly automatic” or “unconscious” behavior (Cohen et al. 1996, p. 663). (For an exception, see Zollo and Winter 2002.) Routines are thus mundane and mindless (Levinthal and Rerup 2006, Cohen 2007), lacking deliberation, the dynamics of skill, or coordination across different individuals.

Here, we are interested in routines that are “largely repetitive over separate invocations of the routine” (Cohen et al. 1996), but we also consider how multiple groups bring different information, skills, and points of view to routines. We therefore follow Feldman and Pentland (2003, p. 96) in defining routines as “a repetitive, recognizable pattern of interdependent actions, involving multiple actors.” In the spirit of grounded theory, we consider the meaning and implications of those action patterns from the standpoint of individual actors.

A third theoretical problem is ontological. We typically see the routine as an entity because we treat it as an outcome of selection forces. If we focus only on the structural features and ongoing patterns, we may miss important dynamics of routines. To address this ontological problem, we draw from Feldman and Pentland (2003), who treat routines as more than the structural features, distinguishing between the ostensive aspects—the abstract pattern of the routine—and the performative aspects—the various performances by specific individuals in specific places and at specific times. Their ontology treats the routine as the dynamic interaction between these two aspects of the routine.

Yet even if we have a sense of what we mean by routines, in practice the routine is more than we can describe. For example, describing the routine as truce misses the conflict behind the truce; it reveals only the stable truce. Most of the conflict is latent, where “once upon a time there was overt conflict, but in most cases it is largely over when the observer comes on the scene” (Cohen et al. 1996, p. 662). Moreover, as Nelson and Winter (1982, p. 111) observe, “the terms of a truce can never be fully explicit, and in the case of the intraorganizational truce are often not explicit at all.” To appreciate the routine as truce, we need a process theory that

addresses overt conflict and the dynamics of stability and change in routines as truces.

We seek to develop such a theory in an inductive study of pricing practice in a large, Midwestern manufacturing firm. We choose pricing practice for several reasons. First, it is mundane; firms do it every day. Few tasks may be more routinized. Moreover, from the standpoint of economic theory, it should be one of the least problematic tasks, because the market should send clear signals. Second, if firm members get that market signal wrong, the price will be wrong and the firm may not survive, so price adjustment should be both evolutionary and adaptive. Third, pricing is central to our theoretical concerns, both in the routines literature and elsewhere. Indeed, both the behavioral (Cyert and March 1963) and evolutionary (Nelson and Winter 1982) theories of the firm used standard operating procedures and routines to address how firms set prices. Finally, understanding price adjustment as an interpretive act requires the theory and methods of sociology (Granovetter and Swedberg 2001, Zbaracki 2007). It is an economic activity but might be better studied as technical work (Barley 1996, Bechky 2003a).

We ask three questions. First, we ask why truces break down. Theories of routines focus primarily on latent rather than overt conflict. For example, Cyert and March (1963) introduce diverse interests but then examine how organizations suppress conflict. The evolutionary theory of the firm treats truces as contracts, as in a hierarchy that allows for zones of discretion or as defined by the context (Nelson and Winter 1982). Yet the most important dynamics may lie in the breach of that stability. If, as Nelson and Winter argue (1982, p. 111), “the state of truce is ordinarily considered valuable, and a breach of its terms is not to be undertaken lightly,” then what leads people to break a truce?

Second, we ask what happens when the truce breaks down. Routines as truces show us how firms avoid conflict, but the absence of a truce should reveal conflict in practice (Contu and Willmott 2003). When truces break, organizational members should fight for what they think the routine should be, thereby yielding evidence on the ostensive aspects of routines. In this regard, our problem is similar to what Barley (1986) saw in his study of how a new technology induces a breach in roles and relationships. Whereas he focuses on how technology shapes roles, we are interested in the breach between the old and the new truces.

Third, we ask how organizational members construct a workable solution in response to a breach in a truce. Routines reenact the past but must also adapt to changing circumstances (Feldman and Pentland 2003). Even if ongoing practice is automatic, a workable solution to a broken truce cannot be constructed automatically. We need to know what the actors consider as they reevaluate their routines. What contracts do actors accept in

choosing new truces? How do they redefine their roles? How are truces renegotiated? For instance, if breaking a truce involves risk, how do the organizational members act to mitigate that risk—if at all?

We develop our approach to the routine as truce by studying a classic problem of price adjustment: a dispute between marketing and sales about jurisdiction over the pricing process. We find two moments in price adjustment. For minor price adjustments, the routine as truce includes conflict and provides stability, as performances allow the two groups to interpret the market and adjust prices independently. For major price changes, however, disputes over price also become disputes over the routines for adjusting prices. Those major price changes threaten not only the stability of the routines, but the stability of the organization.

Looking at the dynamics of the dispute helps us better understand both stability and change in routines and how we think about routines themselves. If we treat routines less as an entity and more as a dynamic interplay between performances and understandings of those performances, we can begin to address adaptation within routines. Here, we study price adjustment, a problem rooted in economics, so we illustrate how our approach to routines can address fundamental problems such as how economics shapes firms (Callon 1998, MacKenzie and Millo 2003, Ferraro et al. 2005, Felin and Foss 2009, Ferraro et al. 2009), how routines incorporate economics (Nelson and Winter 1982), and even how routines shape fundamental questions about macroeconomic dynamics (Blinder et al. 1998). Ultimately, our approach to routines can be extended to address the problems of stability and change in any routine-based work.

## Methods

We seek to generate midrange theory grounded in the activities of various actors. For Glaser and Strauss (1967), grounded theory was a means to respond to “grand theory” traditions that they felt inhibited scholars from developing their own theories. Our research addresses two such traditions. First, we respond to the literature on routines, much of which has been developed to follow the logic of evolutionary theory (Cohen et al. 1996). Second, because we study the work of changing prices, we also respond to the longstanding theory that markets determine prices. Economists studying macroeconomic dynamics now acknowledge that the grand theory does not adequately explain how prices adjust—and so they have gone to managers to understand better how prices adjust. (See Blinder et al. 1998 for one such attempt.) In the spirit of grounded theory methods, we therefore sought to understand the work of changing prices. We treat pricing as a technical practice, much like radiology (Barley 1986) or engineering (Bechky 2003a). Existing theory defaults to market

forces and evolutionary processes, but we focus on the routines for interpreting the market and arriving at a price.

### Context

We studied the pricing process of a manufacturing firm that sold products to warehouse distributors, which then sold to end users. We chose the firm for several reasons. First, because the project addressed questions in economics about the costs of price adjustment, we wanted a firm from which we could generalize to other settings. In 1991, sales work accounted for 12 percent of the U.S. labor force (Barley and Orr 1997, p. 3). (See Darr 2006 for a discussion of the increasing importance of sales work in the economy.) The practice of selling through a sales force with substantial negotiation power in a business-to-business market with few competitors is used in many industries, including health care products, chemicals, automobiles, and high technology. Second, we needed access to confidential information. A pricing analyst who took a course from one of the authors invited us to come study her firm, saying “You don’t know the half of it.” Finally, we chose a firm that was at the forefront of pricing practice. The firm was a market leader with very effective pricing processes that firm members were working to make even better.

The pricing process that we studied used business-to-business pricing in which the firm produced a price list and the sales force negotiated with customers for discounts off the list price for each product. The pricing activities were run by a vice president for the aftermarket business. The pricing director and the sales director worked for him. The pricing director managed the pricing manager and several pricing analysts who prepared the price list and reviewed pricing decisions in the field. The sales director managed the sales force, which included 25 territory and area managers selling in different regions of the country. As in many industrial settings, the firm used both list and negotiated prices, so the pricing process worked sequentially from marketing to sales. Pricing activities began with a price list, which was set annually and sent to all distributors and dealers. Sales representatives then negotiated volume discounts and rebates to address market conditions. Discounts and rebates varied from customer to customer, but generally higher volumes meant larger discounts. This structure was typical of the market in which the firm sold. The marketing group set list prices, standard discount structures, and procedures for handling exceptions. The sales group then negotiated discounts for individual bids.

The aftermarket group that we studied sold nearly 8,000 products across three product lines to nearly 1,400 customers. Most of these customers were warehouse distributors, firms that resold the products to end users who needed aftermarket (replacement) parts. The firm also sold parts to the original equipment manufacturers,

which installed the parts in the machinery they shipped. The study addressed primarily the market for the components sold through the various value-added resellers. The firm had a reputation as a high-quality producer and innovator in its markets, but the reputation varied by product line. On the core product line the firm had long been the acknowledged market leader. It was the first firm to sell products in that market and remained the leading brand. That line sold in the greatest volume and for the highest margins. On a second line, the firm was less competitive, and margins were less than half what they were on the core product line. For the newest product line the firm purchased products from a competitor and resold them under its own label. As a result, a distributor said, “I could go in and quote a customer on [the core product line] and knock the doors off them, but when it came to the [newest line], I couldn’t come close.”

Firm members were increasingly worried about a weakening market position, and their concerns emerged in the pricing debates we observed. They thought that differences between their products and the products of their five major competitors had diminished, thereby reducing the price premium that the firm could charge and threatening to reduce margins. The distributors also faced considerable competition from consolidating distributors and from end users buying directly from the firm. In response to these changes, firm members questioned the value provided by the products, by the service groups, by the distributors, and even by the sales force. They also began to explore new product and service offerings that might increase their margins.

### Data Gathering

We wanted to study price adjustment, so we put together a cross-disciplinary team to address systemic questions. Our research team included an organizational ethnographer with training in industrial engineering methods for estimating costs of practices, a marketing ethnographer, a marketing researcher with both pricing expertise and industrial engineering training, a marketing strategy researcher, and a macroeconomist who focused on price adjustment. We studied the firm’s pricing processes over two pricing seasons at both the firm and several of the firm’s customers. Data collection for the first season was retrospective; we interviewed participants and gathered their stories about the pricing process. In the second season, we tracked price setting as it occurred. We gathered data from three main sources.

*Ethnographic Interviews.* We began by conducting ethnographic interviews (Spradley 1979) with marketing employees who defined and implemented the pricing strategy, as well as sales representatives who negotiated prices with customers. We then interviewed the vice president in charge of marketing, the director of

sales, the marketing director, support staff who gathered pricing information, systems analysts who maintained the pricing systems, and former employees who had been central to pricing. We also interviewed various customers who described how they responded to the firm's price changes. In total, we interviewed 27 informants. The interviews varied in length from 45 minutes to more than seven hours. In many instances, we conducted multiple interviews, returning to interview informants until we had as complete a picture as possible of their perspectives on price setting at the organization. We interviewed five informants twice and two informants three times. We interviewed the main pricing coordinator nearly every time we visited the research site. All interviews were taped and transcribed except for one. For that interview one person took notes while the second asked questions. In total, we conducted more than 50 interviews.

*Nonparticipant Observation.* During the second pricing season, we engaged in nonparticipant observation, following the price adjustment process as it proceeded. We attended pricing meetings and observed interactions among pricing team members. In addition, organizational members demonstrated the computer resources and various other pricing tools that they used. We visited customers and observed interactions and operations there. From these we developed extensive field notes summarizing our experiences and our conversations on site.

*Records Data.* Finally, we collected records data: price lists for both pricing seasons, email messages among team members for both pricing seasons, and meeting minutes and documents from both pricing seasons. When they were available, we collected detailed records of pricing activities and the costs of pricing activities. We also collected copies of special pricing requests (e.g., discounts and rebates off of list price) for several pricing seasons. During the study and data analysis, we continued to contact the pricing coordinator to clarify issues and to gather additional documents and information.

### Data Analysis

We used the constant comparative analysis methods of Glaser and Strauss (1967). We began by obtaining descriptions of the pricing process from each individual involved. Two things stood out as we gathered and analyzed those data. One was the sheer complexity of the pricing process. For example, the firm sold nearly 8,000 products to 1,400 customers, so firm members could arrive at the price for any given product only with great difficulty. In most instances, they were content to focus on aggregate data. A second point was the variation in pricing approaches. We encountered multiple coherent and compelling, but different, approaches

to pricing. This was vividly illustrated when the firm greatly reduced the cost of one of its product lines. From the standpoint of economics and marketing, the "market realities" suggested that the firm should reduce its prices. Firm members agreed that they needed lower prices, so the price change should have been obvious and easy, but they disagreed on how to reduce prices. The disagreements followed functional lines and reminded us of goal conflict in the behavioral theory of the firm (Cyert and March 1963), except that firm members agreed on goals but disagreed about how to achieve those goals. Consistent with the methods of theoretical sampling (Glaser and Strauss 1967), we therefore focused on marketing and sales as the relevant subgroups.

Anchoring our analysis in the routines of adjusting prices allowed us to get at both stability and change. The firm members understood the ongoing routines. The pricing director gave us flow charts summarizing the process for setting list prices and negotiating discounts. As we added descriptive detail to those routines, it became clear that the patterns of the two groups incorporated different performances. This looked very much like what Feldman and Pentland (2003) describe as the performative aspects of routines. When we looked at the corresponding interpretation of the market and how price should be adjusted, we found that the two subgroups differed over even the most basic economic language—price, margins, and profitability. Echoing what Feldman and Pentland (2003) describe as the ostensive aspects of routines, these groups had fundamentally different accounts of how prices should change.

Using this distinction we returned to the routine as truce with the methods of grounded theory. We found that firm members must construct both an external understanding of the market and an internal conception of control that supports that understanding of the market (cf. Fligstein 1996). There were thus two things in play in our findings. One was the marketing or sales perspective on what the market price should be. The second was which functional group was better equipped to interpret the market. The routines suppressed these differences, but on occasion—perhaps every third year—the firm needed to change something about how it set prices. These stories always informed their activities. The key to our findings was one such occasion, one of the largest price changes the firm had ever made. The ensuing dispute revealed the dynamics of routines as truces, showing how the truces broke, what happened after they broke, and how they re-formed. To see how routines adjust, we need to understand those dynamics, so we now turn to describing them.

### Findings

To understand routines as truces, we need to uncover the dynamics of stability and change. Ideally truces should

balance differences in cognition and interests between different functional groups (Nelson and Winter 1982, Gibbons 2006). Yet we have scant evidence on how truces operate in practice. We can describe the ongoing performances, but that will not capture what Pentland and Feldman (2005) call the ostensive aspects of the routine—the interpretive work as different actors create patterns out of those performances. For instance, in discussing routines as truces, Nelson and Winter (1982, p. 111) argue that organizational members maintain a “defensive alertness (or alert defensiveness)” toward any new initiatives. Describing routine practice will not reveal the latent conflict (Cyert and March 1963, Nelson and Winter 1982), let alone the content, character, and dynamics of the truces. To get at these elements of routines as truces, we need to see the truces unravel and re-form.

We therefore structure our findings around a breach in the truces. We begin with a capsule summary of the event, a major cost reduction for the newest product line. We then describe routine price adjustments, which reveal the different performances of the sales force and marketing groups. We show how each group’s information varies according to their routine performances. We next turn to the major price change, focusing on the collapse of the truces. As the latent conflict became overt, members of each group revealed the suppressed differences as they described their perceptions of how prices should be adjusted—the ostensive aspects of the routines. Finally, we turn to the reconstruction of the truces. We find that a truce may suppress latent conflict, but it neither eliminates it nor leads to generalized agreement. Nevertheless, a truce is essential to a stable process for adjusting prices.

### A Major Price Change

In routine operations, the sales force and marketing group collaborated to make price adjustments within a narrow range defined by the pricing process, typically about a 3%–4% change for list price and as much as 10% for the price on a negotiated price. For such small changes, the two groups conferred only briefly as part of the approval process for negotiations or as part of the annual list price discussions. If there were no changes outside this range, the marketing group set list price annually and the sales force negotiated with distributors. For changes outside the range, however, the firm members could either make the changes or they could revisit the routines that defined the range.

The event that led to the collapse in truces was one such change. The firm’s management had recently invested \$24 million in capital to build two new plants for a product line it had purchased from a competitor. One facility was automated and the second, in Mexico, was not. Costs were reduced by thirty percent, creating competing concerns. The executive team needed to

recover the capital it had invested, but because the new plants eliminated the markup that had gone to the competitor, the firm could also reduce prices for that product line by as much as 30%.

The problem was how to reduce prices. Lower prices presented opportunities for both the sales force and the marketing group, which led to functional conflict (Cyert and March 1963, Rotemberger and Saloner 1995). Marketing proposed reducing the list price to pursue increased market share. Sales proposed leaving the list price high to pursue increased sales and revenues through negotiated reductions. These differences threatened to disturb the existing cooperative equilibrium; however, to appreciate that equilibrium and the threat the lower costs posed, we must first analyze how existing routines shape the information and incentives of each group.

### Routines as Truces: Existing Performances

In broad outline, the existing routines were simple. Each year during what firm members called “pricing season,” a task force run by the marketing group looked at both competitors and customers before revising the price lists. List price then served as the basis for negotiations with the customers purchasing specific products in specific locations. Through these schematic aspects of the routines, the firm members arrived at a price, established in sequence from the price list to the final negotiated price for each of the firm’s roughly 8,000 products. These performances shaped the beliefs and solutions of both groups by determining the information available to them. Of course, actual performances vary, so we show how typical patterns determine the information each group used.

*Marketing: Setting List Price.* The marketing group that set list prices included the director of pricing, a pricing manager, a pricing analyst, and a representative from finance. These employees increasingly had MBA training and sought to bring that training to the firm’s pricing practices. In practice, they frequently lacked the data or tools they needed to make complete economic analyses and they recognized those limits. One manager said,

To say there was a defined process would be a lie. I would try to get the cost [and] sales analysis information and try to gather with the little experience I had competitor information to come up with what I knew people had budgeted for as a price increase.

Although the practices incorporated the concepts that they had learned in their training, those concepts often emerged in more abstract terms. Consider, for example, the following extract from a meeting on Latin American pricing:

**Latin American representative:** If we wanted to break it down by product classification, I think [our traditional line] would justify a couple points more in

the spread, whereas [our newer lines] might need to be a little closer to the [Competitor 1] target price, if not right even with them. [On our third line, our product] justifies a little bit higher premium than any [Competitor 1] equivalent. Five percent is the average goal that we would like to have.

**Pricing analyst:** Are you saying that on an average basis you are within five points up to [Competitor 1's] price, the net price, you can take the business away from [them], or that you are able to take it away from another competitor?

**Latin American representative:** I am on equal ground to compete against [Competitor 1].

**Pricing analyst:** So you are saying customers will value [our product] more than [Competitor 1's], or is that just because they like your pretty face?

**Latin American representative:** That is what I would like to think. For example, in regard to the national brands, the premium is justified because of the quality issues. [Competitor 1] is the main part that we are competing against, and based on the quality presentations that we provide—and I am taking into account changes—we can fight with the five percent.

**Pricing analyst:** This is interesting. In the States, typically for [our traditional] product we dominate in the leadership. We are able to command a higher price. On these other products in the States, [Competitor 1] typically demands that premium perception and they are able to command a higher price than [ours].

The example illustrates a typical marketing conversation about market position as the analysts sought to understand how their products could be differentiated from competitors' products (cf. White 1981). First, the conversation did not discriminate according to specific actors. For example, there was no concrete customer in the analysis. Instead, the pricing analyst said "customers will value" the firm's products over the competitor firm. Second, although the firm faced several competitors, here the discussants focused on one major competitor. Here, Competitor 1 (the name is redacted for confidentiality) served as a reference point throughout the analysis. This was quite typical. Conversations and analyses rarely made comprehensive comparisons against all competitors. Third, the analysis addressed aggregate data. For example, although the firm produced 8,000 products, the conversation focused on the aggregate prices for the traditional product line. Finally, the analysis focused on the differences between price levels rather than presenting any specific price. These analyses typically overlooked immense differences in distributor circumstances, a problem left to the sales force. Instead, the analysis sought to transcend such differences. For instance, the Latin American representative initiated this analysis by arguing for "a bit higher premium" in prices. Rather than speaking of specific prices, he looked for an "average goal" of a five percent price premium.

More detailed information was available and used. Each year during pricing season the marketing group

gathered detailed information about price and market position. The process began with what the director of pricing described as "high-level price discussions" as senior managers considered company concerns in revenue, profitability, and market share goals. The market discussions in these accounts also used aggregate data, as prices and products did not even figure into the conversation. Instead, these discussions assumed that the headquarters staff was responsible for firm strategy. For example, a manager said that "the business units would meet with the CEO and in negotiations they would come up with which business unit has what expectations for the coming year in terms of profitability dollars." Similarly, the director of pricing said that management was "heavily invested in OE [original equipment products] and wanted [a targeted] amount of revenue and 30% of the share." As we will see, in their subsequent analyses the marketing group always needed to address these goals.

The formal process began each fall when a pricing manager assembled a pricing team to consider list prices for the coming year. An analyst from the marketing group would start to gather essential market information. That information included the firm's past year list prices, quantity sold, and major price changes, as well as current product costs. Where possible, the competitor information included price lists, discount structures, and quantity sold. The marketing group depended on members of the sales force for competitor information from distributors with whom they had good relationships. The pricing director said, "We kept all the competitors' price lists when we could get our hands on their market price sheet, as they published it just like we did...and we could find out the discount structure of our competitors that way." That database became the essential information for analyzing market position.

From these data the team would begin a competitive analysis. Using the broad guidelines they developed, the director of pricing would compare prices against competitors, possibly adjusting individual part numbers to reflect perceived deviations from the aggregate goals. The database provided too much information for the team to use so they focused on what they considered the essential market information. For example, in a meeting to recommend list prices for the U.S. market, the pricing team focused on two of the three major product lines, discussed only one major competitor for each line, and seldom mentioned customers. They focused primarily on the top-selling products. The vice president explained the logic:

So if we have some five or six thousand part numbers of replacement [parts], I know that 100 part numbers on [one] side of the business account for 95% of the volume. And within that probably 30 or 40 [part numbers] account for most of that. So you can bring it down pretty quickly.

The central artifacts for the marketing analyses were a set of what Callon (1998, p. 23) describes as calculating tools and the resultant data on the effects of a price change. These artifacts served as representations of how performances should proceed. For example, the marketing group had developed a “market basket” of 100 of the most popular parts for each of the 3 major product lines to determine the financial implications of a price change. That analysis used the sales volumes for the previous year and a rough estimate of the average discount for each of those products to arrive at an expected sales price. The calculations did not always conform strictly to the MBA training of the marketing group, however, because the tools excluded the economic effects of price sensitivity or competitor response (Pashigian 1998, Monroe 2002), so there was no formal way to incorporate customer or competitor concerns in the profitability calculations.

The firm’s hierarchy also shaped the outcomes of the analysis. After completing these simulations, the marketing group presented the proposed prices to the director of pricing and the vice president for the aftermarket. In these conversations, the team always returned to the firm’s cost, margin, and profit goals. For example, the director of pricing might want to increase aggregate price for an entire product line and then reduce prices to match competitors on certain parts in that line. The pricing analysts would then compare prices to cost and calculate aggregate profit and market share, iterating until the prices met the firm’s goals. They justified their pricing plans in terms of expected aggregate customer response and key competitor actions. The pricing team then incorporated management suggestions and re-adjusted prices. Once they found prices that were profitable for the firm, they would publish the price lists.

*Sales: Negotiated Price.* With list prices set, work moved to the sales force. Price negotiations could occur at any time during the year, but the new list prices opened most negotiations. The sales force used the list price as the basis for discounts, rebates, and special terms, all of which it then used to address market variations. As with the list price process, negotiations involved a series of steps, beginning with a new price list and ending with a proposed negotiated price. Here we consider how the sales process shapes the ostensive aspects of the routine as defined by economics and marketing and organizational theory. The following example, in which a sales representative described how he would evaluate a deal, illustrates how the sales force thought about pricing decisions.

There is a distributor in New Jersey with [replacement] parts. . . . We need distribution in that area and they have a good reputation. . . . They have a high percentage of their sales through [low-profit parts], but they also sell other [high-profit parts] and that is where we were most

interested in growing that business. Well, we need to give something in the case of [their low-profit parts]. We gave them the competitive price, but we benefited with the other business. So overall it became a good distributor. They are now a half a million dollar distributor.

This quote reflects the approach the sales force took. First, the form of price is different: the sales force generally considered acquisition price—price after discounts and rebates. Second, all the data are at the level of distributor bid. Third, although the sales representative addressed customer reaction in the form of price sensitivity, market position in terms of competitor reaction, and profitability, he did so in his terms. Customer reaction appears in the “need to give something”—in this case, a competitive price implies customer price sensitivity, but at the bid level. Market position appears in the need for distribution in the area (thereby taking sales from a competitor) and the desire for a distributor with a good reputation. Profitability is evaluated at the bid level, so the sales representative will trade low prices on one product line for profits on another product line. Price has a very different meaning for the sales force.

After price season, the vice president for aftermarket would call a meeting to present to the sales force the price list, the logic behind the price changes, and the current market strategy. Price negotiations could occur at any time during the year, but the new price list provided an important signal. Given a list price and the market representations behind the price, members of the sales force began negotiations with the distributors for discounts, rebates, and special terms.

Sales representatives were the primary bridge from the firm to distributors. Like Barley’s (1996) technicians, they worked at an empirical interface, except where technicians worked between a production system and a material world, sales representatives worked between internal representations of the market and the ongoing experience of that market in the various reseller demands. In the role as bridge, the sales force evaluated distributor pricing demands. Distributor profits depended on the difference between the purchase price and the sales price. They justified the difference based on the services and other value-added activities that they might provide. Distributors complained when they believed the firm’s prices cut into their profits or prevented them from competing for business.

Conversely, the sales representative needed to consider firm interests. He evaluated distributors on three dimensions, all related to firm goals. One dimension was distributor reputation, which indicated the value that the distributor could add. A second dimension was the profitability of the parts that the distributor sold, which determined the distributor’s contribution to firm profitability. A third dimension was the overall revenue the distributor produced, which determined contribution to market share. These were the same goals the marketing group



used across the entire market to set list prices, but cast to distributor circumstances.

As with list price, negotiations between resellers and sales representatives followed a standard pattern. When sales representatives identified a legitimate business need in those complaints, they could adjust the price in various ways to “take care” of the distributor. For example, when a distributor sought the business of a large end user, it might turn to the sales representative for help. The sales representative would begin with the standard discount for an entire product line, perhaps negotiating a slightly larger discount and, if necessary, adding a rebate on specific parts. Rebates could also target particular goals. For example, a sales representative could encourage sales growth by offering a distributor better prices if it sold more products in its market. Special terms included offers to pay shipping costs or to provide distributors with deliveries to multiple locations.

Sales representatives needed to use these price adjustments wisely. To ensure the sales force did, the firm had an incentive plan that gave rewards for both revenue and profit margins. In addition, the sales manager and others approved negotiated deals. The approval process enabled and constrained performances in that it focused on various firm goals. Negotiations began with a standard discount set by marketing. Discounts varied by volume and specific customer circumstances, so the sales force could divide the customer population into segments based on order value. Exceptions required a request for special pricing and a detailed report on the size of the business the representative was trying to obtain, the competitor who had the business, the competitor’s price, the distributor profits before and after a rebate, and the incremental margin for the firm. Depending on the size of the discount or rebate, the request could go up the hierarchy for approval. For very complex bids, the sales force often asked the financial analyst to help with the calculations. For example, in one situation a distributor demanded one of the deepest discounts the firm had ever offered. The director of pricing assembled a team that included the territory manager, the area sales manager, and the financial analyst to show that the returns on past discounts didn’t justify the deeper discount.

*Routines as Truces.* This combination of routines worked well for the firm’s typical 3%–4% price increases in that it maintained the integrity of market information for both groups. Both global and local rationality took precedent when necessary: the marketing group considered broad market trends, and the sales force then incorporated specific exceptions. Each group agreed not to interfere in the jurisdiction of the other group. This allowed each group what Nelson and Winter (1982, p. 108) call a “zone of discretion” in performing its work. Performances could be adapted to particular circumstances, yet the overall structure could be

retained. List price, for example, could be fit to internal revenue goals, and local price could be fit to individual distributor interests.

Finally, the two groups could avoid disputes over the economics, the organizational features of the routines, and the situated understanding of fundamental pricing terms. They could incorporate information from their specific circumstances without battling over the validity of that information. They worked in parallel, interacting only when the marketing group delivered list prices and discount structures to the sales force or when the sales force provided local market information that informed marketing databases. The routines of each group stored market knowledge that the other group could trust.

### **The Collapse and Re-Formation of Routines as Truces**

Behind the routines, however, lay considerable latent conflict. For small price changes the latent conflict mattered little, so ongoing price adjustments were easy. Exceptional changes, however, required confronting differences about the idea of the routine—the ostensive aspects—as they decided how future performances should proceed. Confronting those differences revealed two important features of organizational routines. First, unlike individual routines, organizational routines combine multiple participants and their perspectives on what constitutes the routine. Second, ostensive aspects of routines are created as the various participants decide how future performances should proceed. In our findings, those differences were evident in the breach, as we now show.

*The Breach in the Truce.* The event that led to the collapse in truces occurred during the first price season that we studied. That year the firm members faced a price change so large that they could no longer maintain the truces that held for small price changes. In principle, it was an easy price change to implement. The vice president for aftermarket products had persuaded the board of directors to commit the largest capital investment in the firm’s history, \$24 million, to build new facilities for the product line purchased from competitors and repackaged under its name. With the new facilities, labor costs were reduced and the competitor’s markup was eliminated, so costs were 30% lower. Price could be reduced significantly.

To cut prices, the vice president for aftermarket created a pricing team that included “both field [sales] and inside [marketing] people.” That, he said, was “the only way to build consensus on both sides.” In practice, the process was less egalitarian. Both groups actively participated, but the marketing group controlled the agenda. The process began with consensus. All agreed on the basic market conditions. Given the cost decrease, the potential margins—the difference between costs and

prices—had clearly increased. All agreed that the customers were price sensitive, so a price decrease would lead to increased quantity sold. All also agreed that there was little difference between competitor products and that the firm's prices for that product line were higher. Even if competitors responded with their own price decreases, a lower price would yield greater profitability. Yet the price cut opened an enormous rift between sales and marketing that tore apart an existing truce.

The collapse occurred over how future performances should proceed. The marketing group wanted to price more aggressively by lowering the list price. The director of pricing said that the market data demonstrated that “the people who did know about us considered us one thing: high price.” The customers, he believed, were sensitive to list price so a lower list price would increase sales. He said that lowering list prices and “promoting the hell out of it” would signal that the firm was serious about competing.

The sales force disagreed. They wanted to negotiate price reductions that targeted customer circumstances so they could know that the lower price reduction would be passed along to the end users. They said that many distributors, on receiving the new price list, would have no reason to pass on a list price reduction. A member of the sales force said,

If I am a distributor and I am already selling to this guy and [you] lower my [list price], do you think I am going to pass that along to this guy? I don't think so. I am going to put that in my pocket. So what did it gain us? It cost our company money.

Also, distributors who purchased few products from the new line would see no benefit to a lower list price. The effort to create a perception of good value through lower prices would have no effect on their customers.

Behind these differences were fundamental questions about why customers behaved as they did. That dispute over customer behavior evoked questions about what economists label as “price sensitivity” (see Nagle 1987, Dolan and Simon 1996), a language that the director of pricing had used directly. If customers were price sensitive, then the marketing plan was better: a lower list price would mean more sales, leading to higher revenues (total volume sold times price) and higher profits (because of the higher volume and the lower cost). Of course there were risks. A lower list price meant lower profits on the existing sales. If the volume sold did not increase enough to make up for those lower profits, then the firm would lose revenue and profit. In that case, the sales force plan was better. As the sales director said, “When you change it with it up front [list price], then you're limiting yourself. You're right off the bat giving away some profitability and hoping you get the return with increase in margins or volumes.”

The different approaches reflected different ongoing performances and led to very different understandings of

how price adjustment should proceed. A critical question was who had the most accurate information about customer behavior. This was the kind of dispute that routines as truces let the firm avoid. Given their ongoing performances, each group had its own perception of market information, which in turn shaped beliefs about who would best serve the firm. Once the truces collapsed, the groups began to battle about both information and incentives.

#### *When Truces Collapse: Disputes over Information.*

Members of the marketing group favored using list because they believed that list prices were the most visible prices in the market. Distributors knew that list prices were the same for other distributors, although discounts, rebates, and other terms could vary. A cut in list price would thus be equally clear to all distributors. List prices were also most visible to competitors, making list price a more effective signaling tool. Discounts, rebates, and other pricing terms were too customer specific and too fragmented to effectively signal a new market position to end customers and competitors. A well-publicized list price reduction would also ensure that end users knew about the price decrease, creating pressure for distributors to pass on the price cut or risk antagonizing their customers.

Members of the sales force, in contrast, used list price as a starting point, so they did not believe that customers paid attention to it. “In our industry the list price don't [*sic*] mean anything to anybody,” said one sales manager. The sales force argued that customers were sensitive to discounts, because acquisition price was determined in negotiations with distributors. A list price was a useful starting point, but the sales force wanted the latitude to use discounts when customers needed a particularly competitive price. List prices could (and should) remain higher, because discounts should be used only when the sales representative had good information that the distributor needed a lower price. The sales force members argued that because list price reductions would be given to all distributors, they would not address different market segments. A sales representative said a list price cut would mean that “80% of our business we lowered for no reason at all.” List price was too blunt an instrument.

The performances of the two groups also led to competing definitions of competition and hence the relevant products. The marketing group saw producers as competitors, because in their performances they evaluated other producers. They noticed that those competitors delivered low prices on the highest volume products. The director of pricing said, “Our competitors had been set up to go screaming down their production line. When you went into almost every customer, those were the parts they asked you what the price was.” The marketing group therefore focused on those high-volume parts and wanted to signal to customers and competitors that

it could now compete on those products. For the sales force, competition varied by distributor, so many customers did not need a lower list price. Sales representatives thought that a price should be cut only when a competing supplier had been in and offered a lower price. Other prices could remain higher.

*When Truces Collapse: Disputes over Interests and Jurisdiction.* Once the truce had broken, disputes over jurisdiction broke out. Without the truces, neither group trusted the other's insights. Some jurisdictional disputes can be resolved by using concrete and tangible objects (Beckhy 2003a, b), but here the disputed objects—price, competitor, product, and customer—were loosely defined and abstract. Without a tangible object to serve as a bridge between the two groups, the fight began to devolve into potentially intractable disputes.

For example, members of the sales force, who focused on customer bids, spoke in detail about the variations in the market across regions and across product lines. That knowledge was encoded in part in what one of the pricing analysts at the firm called the “pink books,” a set of large three-ring binders that included all the rebates that the firm had approved over the past several years. But the only artifact representing a bid was the “request for special pricing,” which members of the sales force needed to submit to the marketing group for approval. Members of the marketing group therefore tended to dismiss the knowledge and actions of the sales force. The director of pricing, for example, argued that the negotiations were an inefficient and inappropriate way to arrive at price. He advocated control of the market position from headquarters because he believed that the sales force would make poor pricing decisions. He said that he “hated rebate programs because they need to deal with exceptions. . . . They easily get out of hand. They are driven by not making decisions up here.”

The task force only exacerbated existing tensions. The financial analyst had studied the costs of rebates, and the director of pricing said that the data on the programs “speak volumes.” He said, “We had a situation where something like 70% of the rebates didn't bring in \$5,000 worth of business, and that was a constant fight between marketing and sales.” In response, the director of sales questioned the value of the marketing group, saying, “What you had, in my opinion, was very minimal experience with this industry [in marketing] up against people [in sales] with a lot of experience in the industry.” He considered the task force a political battle. He said,

What happened was you get a natural following in the sales organization. Those in sales follow the sales organization, and those in marketing follow the marketing director, and so even though we empowered them to be a team and work and come up with their own decision, they already knew what the answer was from their director of marketing. . . . So like I said, the team was deadlocked.

### **Resolution and Reconstruction: The Vice President's Decision and Denouement**

The task force handed the vice president a recommendation to reduce list price, backed by dissenting opinions and amplified latent conflict. Behind that decision was a battle over the status and identity of each group, as well as the value each added. The pricing director called the sales force “champions of high price,” and the sales force called headquarters “mahogany row.” As one member of the headquarters said, it became an “emotional issue”—a pricing analyst said, “There was one argument on Tuesday morning that I thought they were going to throw punches.”

The effects of the price change on firm goals—volume sold, revenues, and profits—were perhaps the greatest uncertainty of the marketing plan. Unfortunately, the marketing group lacked the market data to calculate price sensitivity, meaning they didn't know how customers would react to price changes. For small price changes, this lack of data had not been a concern, but for a large change, the quality of the information was a concern. Even the pricing manager, who was one of the strongest advocates of lowering the list price, said, “I am afraid right now and concerned about our ability to gain the volume back in the first year, quite honestly.”

The vice president's response was surprising. He said the recommendation to lower list price was “probably not what I would have gone with.” He agreed that the firm charged high prices for the product line purchased from competitors. He dealt with both end users and distributors, so he knew the issues for each. He readily used both list price and discounts, depending on the circumstances. But price also had internal meaning, because list price was used to estimate revenue for the year. Even if the marketing group could demonstrate that the lower price would lead to higher volumes, the routines did not use such information. The revenue plans assumed the same volume sold as during the past year (rather than the increased volume that the marketing group hoped the lower price would generate). Using a lower price, projected revenue would thus fall short of firm goals. Given the need to recover the \$24 million capital investment, this would be a problem.

The vice president's decision could go in either of two directions. He could choose the marketing plan and signal a new order in the process of adjusting prices. He could also follow the sales force and revert to the existing order. Instead, he agreed to lower prices on the high-volume parts but made one change, saying, “We had to have this thing revenue neutral.” He said, “I kind of preempted the pricing on [our traditional product line] and raised that price by 4.5%.” List prices—and thus revenues—on the old product line *increased* so revenues could meet the plan. No formal evidence addressed the effects of these changes on customer demand, but the

lack of such evidence is typical for this type of firm (see, for example, Nagle 1987).

The vice president's decision had ironic effects. The truce that collapsed over how to lower list price reformed in response to his decision. One reason was the flexibility of the price structure. The director of pricing got what he wanted on the new product line, but the vice president also raised list prices on the oldest product line, for internal reasons alone. Both marketing and sales agreed that the increase was a bad pricing decision; it fit neither of their logics. Yet the flexibility of the price system made it possible. The director of pricing had claimed that discounts and rebates were out of control, but the sales representatives made his lower list prices possible with their discounts and rebates. The sales force disagreed with both price changes but made sure that the price after rebates for the old product line did not increase. A sales representative said,

[We said] we are going to raise the pricing and we did. It made the model look like it was revenue neutral, and I have heard some people say that our [traditional product] pricing is high as a result of that in the market. But once again we adjust with the deeper discount or deeper rebate or whatever and make up for that on a case-by-case basis.

And so the truce resumed as they went back to their work. The director of sales said, "You've got to move on. You can't keep fighting it. It is pointless. You have to move on and make it work."

## Discussion

Evolutionary theorists have focused on the routine as a stable outcome of exogenous selection forces. In contrast, we have used the distinction between ostensive and performative aspects of routines to address the endogenous dynamics of routines (Feldman and Pentland 2003). We show how truces break down and re-form in response to disputes over market forces. Disputes such as we found are often treated as conflicts in information (Nelson and Winter 1982) and vested interests (Cyert and March 1963, Rotemberger and Saloner 1995), a problem partially addressed by the routine as truce. Yet the existing literature presents the routine as truce as a stable solution to conflict (Pentland and Feldman 2005).

We show both stability and change in routines as truces. We first show the basic structure of price adjustment performances, including the activities of the sales force and the marketing group, their different goals and incentives, and the different information that they take from and bring to the process. Were we to stop here, we would think of price as an outcome of mundane routines that are stable and structured.

The key to our findings is a price change beyond the typical range of routine adjustments. That change introduces a dispute over the ostensive aspects of routines—the different perspectives held by different participants

on the price-setting actions and activities. Those aspects are present even during routine operations, but often go unnoticed. Here, they are revealed as the two groups articulate their conflicting perspectives on how prices should be set in the future. Our findings, consistent with the arguments of Feldman and Pentland (2003), reveal that routines change in the dynamic between these performative and ostensive aspects, as performances shape the ostensive, which in turn shape future performances.

Our findings show how attending to such dynamics allows us to apply the routine to longstanding theoretical puzzles. First, for theories of routines as truces, we distinguish between the routine and the truce by showing how the performance of the routine leads to the breakdown and re-forming of truces between sales and marketing. Second, by showing such dynamics, we clarify the theoretical ambiguities regarding adaptation, definition, and the ontology of routines. Third, by using a revised ontology of the routine, we can consider implications beyond organizational theory alone. We demonstrate implications for questions about how social sciences shape managerial practice (Callon 1998, MacKenzie and Millo 2003, Ferraro et al. 2005) that have long troubled organizational scholars and economists, including how routines are used in making economic decisions (Nelson and Winter 1982) and how prices adjust (Blinder et al. 1998). Here, we have focused on price adjustment and hence economics, but our approach could be extended to any setting where routines and truces are essential to a stable interpretation of the environment. In economics, operations, accounting, or finance, stability and change emerge from performances in and the work of the organization. Below, we show how.

### The Routine as Truce

Nelson and Winter argued that the routine as truce serves as an implied contract or "a stable accommodation" (1982, p. 108) between individual motivations and organizational needs. The metaphor conflates the routine and the truce. Moreover, because the metaphor focuses on routine operation, it suggests that the routine resolves conflict, although a routine may incorporate conflict (Pentland and Feldman 2005). To understand the role of the routine, we need to consider the dynamics of truces in relation to routines, rather than treating the routine as a truce. Here we return to our research questions to begin to unpack those dynamics.

We begin with the question of why truces collapse. Nelson and Winter (1982, p. 111) argue that "the state of truce is ordinarily considered valuable, and a breach of its terms is not to be undertaken lightly." Yet here the truce collapsed over an issue on which the two groups *agreed*: the need to reduce prices. In routine operation, each group could change price within a range,

as the routines confined conflict to small changes, not the overall terms of price, profit, and customer. The breakdown emerged as each group responded to a major price change by proposing its usual approach to reducing prices. Neither group could impose its own will, so conflict broke out.

It is common to attribute such conflict to individual interests (e.g., Nelson and Winter 1982, p. 111; Rotemberg and Saloner 1995; Gibbons 1999). Yet we find that routines channel behavior, shaping how actors see and describe their interests. Here we found that the marketing group saw list price as the most important price, the end user as the customer, and the competition as other producers. In contrast, the sales force saw the negotiated price as the most important price, the distributor as the customer, and competition as competing bids. Those descriptions were part of the vocabulary of motives (Mills 1940) that each group used to explain its actions as well as the actions of the customers, competitors, and the other group. The vocabulary depended on the routines and the work.

The ensuing conflict revealed the importance of both. Overt conflict increases each function's uncertainty over future positions, but that uncertainty also reveals deeper ambiguities about how to do the work. When the conflict erupted, the two groups began to confront the subjective nature of what they had treated as objective. Economic relationships such as price sensitivity that had been taken for granted were now subject to debate, and the process for interpreting the market became unstable. Categories such as price, customer, and competitor that established the vocabularies of motive were in question. Those differences then overflowed into fundamental disagreements over roles (Barley 1988) and jurisdiction (Bechky 2003a), which until then had shaped behaviors without significant debate. The differences were not new, but what had been latent conflict now undermined the work.

In re-forming the truces, the vice president sidestepped these differences. His solution violated the assumptions of both groups, but each group supported it. Their differences had exposed the instability of existing truces, so instead they held onto two themes that they could agree on: the vice president's authority to decide and the need to make the process work. Neither group tried to resolve the differences over who had better information or whose interests were better served by the imposed solution. Instead, each group preserved its belief in the integrity of its own information. They therefore chose to ignore their differences and suspend the overt conflict. That was the new truce.

The outcome changed prices. Thus, it reflected adaptation to market circumstances. To look at the organization before and after, nothing would seem different. Yet learning and adaptation did occur. First, the solution deferred to the marketing group, suggesting that they

now enjoyed the favor of the vice president. Second, the solution had cognitive effects because the marketing solution prevailed and so did its understanding of the market. Third, the sales force remained important to the task of negotiating price. The solution could not work without reverting to the aspects of the routine that the sales force favored. The learning and adaptation therefore occurred in the dynamic between the ongoing performances (which proceed under a prevailing truce) and the questions about future performances (which in this case led to the truce being revisited).

### **Adaptation, Definition, and Ontology of the Routine**

To appreciate that dynamic, we must reconsider the theoretical problems we addressed in the introduction. Consider first adaptation of routines, which we treat as a process of endogenous change. We find different processes depending on the magnitude of the change. For smaller changes, the performative aspects dominate. The routines define a "zone of discretion" (Nelson and Winter 1982) in which the marketing group changes list price and the sales force then negotiates an acquisition price. For larger changes, the ostensive aspects dominate. Once the truces broke, we found considerable conflict over how price adjustment should proceed. The ensuing battle reveals how fragile the truces can be.

Consider also the definition of a routine. The battles here show that such a definition must incorporate "differences in information, perception, preferences, and interpretation" (Feldman and Pentland 2003). The dominant metaphors compare routines to habits, scripts, computer programs, genes, and skills and presume that routines proceed without deliberation (Cohen 2007). Yet we show deliberation over basic economic questions: what price to set for what customer under what circumstances. These performances are routine but not automatic. The meanings may not be articulated in the performances, but they shape market representations. We also find that those meanings lead to the functional conflict that involves serious and substantive deliberation over conflicting meanings of basic economic relationships, including price, product, customer, and competitor.

Finally, focusing on such deliberation reveals why we need an ontology of the routine that distinguishes between the performative and ostensive (Feldman and Pentland 2003). The ongoing performances of each group shape understandings within the routine. Each group's images of those performances shape their understandings of how routines should be performed in the future. Yet describing either aspect of the routine does not capture the meaning of the routine. The problems of pricing, the power dynamics, and the resultant truces all emerge in the dynamics between the ostensive and performative aspects of routines. For example, when the

vice president changed list prices, he established the economic logic and power of the marketing group as important to future performances. Once the fight ended, the two groups reverted to the truces that let them work independently. Yet in subsequent performances the sales force reclaimed some power because the negotiated discounts made the change workable.

The ontology of the routine is but a starting point. A language of routines may be important to our theory, but firm members rarely used it. During our two-year study, we counted only four occasions when firm members used the word “routine.” For them, the important issues were questions about the work: who the customer is, what products matter, what the competition looks like, what price matters, how prices should be set, and who has power under what circumstances to make decisions. To address stability and change and to develop grounded theory about routines, we must first pursue the questions that emerge from work. We can then use their language to consider our theoretical questions. To illustrate, we turn to three specific examples, all variants on questions of how economic theory is performed in practice.

### Routines and the Performance of Economics

We begin with the problem of how social sciences shape managerial practice (Ferraro et al. 2005), as suggested in arguments that economics shapes, rather than describes, the economy (Callon 1998, MacKenzie and Millo 2003, Beunza and Stark 2004). Experimental (e.g., Frank et al. 1993) and historical (MacKenzie and Millo 2003) evidence demonstrates that individuals modify their behavior to follow economic theory. Ferraro et al. (2005) call for more research on the problem because they are concerned “that theories become dominant when their language is widely and mindlessly used and their assumptions become accepted and normatively valued, regardless of their empirical validity.” In response, Felin and Foss (2009, p. 656) ask that scholars consider “why and how theories influence human behavior and managerial practice.”

As Beunza and Stark (2004) note, to understand the use of economic theories, we need to understand the sociocognitive work in the marketplace. Our use of the performative and ostensive aspects of routines (Feldman and Pentland 2003) illustrates one approach. The ongoing performances that we describe provide the stable information and predictions about the future essential to calculative agency (Callon 1998). Yet when faced with major price changes, the sales and marketing groups had to confront differences in their market interpretations and all was potentially up for negotiation—not just what to do in the marketplace, but what to do in the organization. The subsequent battles threatened to undermine all appearances of stability and all possibilities of continuing to interpret the market with integrity.

The result was what Beckert (1996) describes as Knightian uncertainty, circumstances in which firm members do not know what to do (cf. Quinn and Worline 2008). Somehow, the two groups needed to find a way to make changes without losing the stability to support those changes.

Given this ambiguity, the marketing group, with its ties to the language and logic of economics, had an advantage. One reason the fight was so protracted was that there were no physical referents, as in physical artifacts (Bechky 2003b, Carlile 2002) or technology (Barley 1986, 1996), that could be used to resolve differences. The absence of such referents had not been a concern in the ongoing performances, because adaptation within the routines as truces could be accepted without controversy. Now, however, what had been treated as objective reality—both market interpretations and organizational jurisdiction—was revealed as subjective. The marketing group had no evidence to support its claims, but given the ambiguity of the problem, its interpretation had two advantages. First, whereas the sales force tended to focus on concrete pricing terms, the marketing group offered a more abstract language rooted in economics. As Lave and Wenger observe, “The generality of any form of knowledge always lies in the power to renegotiate the meaning of the past and future in constructing the meaning of present circumstances” (1991, p. 34). Second, jurisdictional battles reflect political, institutional, and cognitive forces drawn from macrosocial battles (Bechky 2003a). Absent a physical artifact to help negotiate meaning, the institutional structures of economics buttress the apparent objectivity of the marketing group’s claims, reducing the ambiguity.

The advantage of the marketing group points to an important shortcoming of research on the price system, which is built around economic analysis (e.g., Nagle 1987, Dolan and Simon 1996, Monroe 2002, Pashigian 1998). The marketing group relied on a subset of this professional knowledge of economics—what Barley (1996) calls “formal knowledge”—to shape its idea of what the routine should look like. As MacKenzie and Millo (2003, p. 138) note, such knowledge allows actors to simplify and disembed problems from the social complexity surrounding them. In contrast, the sales force relied more on what Barley (1996, p. 425) calls “contextual knowledge”—“a situated, rather than a principled knowledge of... techniques.” Ironically, the sales force proposed individual negotiations to reflect specific customer circumstances, which better reflects the spirit of market exchange. Nevertheless, the work of the sales force receives far less attention. Rather, they are portrayed as barriers to effective implementation of rigorous practice (e.g., Dolan and Simon 1996). Yet the performances of both groups are essential.

These shortcomings point to a flaw in how we typically think about economics: we presume a market and

assume that both interpretations and outcomes should flow from market forces. Economic theory begins with an abstract idea of the market and develops formal knowledge of that market. In contrast, we demonstrate that market interpretations flow from performances within the firm. Studies of the role and the work of each group can show how their interpretations are essential to the performativity of economics (Callon 1998; MacKenzie and Millo 2003; Ferraro et al. 2005, 2009; Felin and Foss 2009) and to questions that have long troubled economists. We turn to those in the next two sections.

### **Routines and the Use of Economics**

One such question motivated both the behavioral (Cyert and March 1963) and evolutionary (Nelson and Winter 1982) theories of the firm. The questions began with what is known in economics as the “marginalist debates” (see Friedman 1953; Machlup 1946, 1967), a problem in understanding how managers adjust prices that was central to the early literature on routines. The debate centered on evidence that managers did not use economic theory to set prices. Price theory predicts that firms will set prices where marginal cost equals marginal revenues, but in a classic and controversial study, Hall and Hitch (1939) found no evidence that managers did so. In economics the prominent response was what Friedman (1953) called the “as-if” assumptions: even if managers did not use marginal cost or marginal revenue, economists could still predict aggregate market behavior by theorizing “as if” they did.

The behavioral theory of the firm shifted the focus to the firm, arguing that the “firm... sees the market through an organizational filter” (Cyert and March 1963, p. 2). This shift put the economic variables (e.g., price and quantity) and relational concepts (e.g., the effect of price on quantity demanded) to the side. Instead, the theory focused on organizational variables (such as organizational goals) and relationships between those variables (e.g., quiresolution of conflict).

The solution in evolutionary economics was perhaps most significant to the theory of routines. In their evolutionary theory of the firm, Nelson and Winter (1982) compared routines to skills, arguing that choices within routines are not deliberate. Instead, they emphasized “the automaticity of skillful behavior and the suppression of choice that this involves” (1982, p. 94, emphasis in original). Routines were black boxes and behavior was irrelevant. Such an approach offered a deft solution to the apparent absence of economic theory in managerial work, but it effectively eliminated economics, actors, agency, and cognition. It stripped the routine of content.

Our findings suggest that we need to reconsider some of the fundamental elements of the behavioral and evolutionary theories of the firm. The evolutionary theory of the firm (Nelson and Winter 1982) treats routines

as equivalent to automatic skillful performances, but we show the considerable agency and cognitive effort required to enact both the performative and ostensive aspects of routines. Our findings suggest that a more fruitful line of analysis would focus on how routines and capabilities shape—and are shaped by—attention (Gavetti 2005, Rerup 2009, Salvato 2009, Sullivan 2010). Skillful performance is not automatic. Rather, performances and judgments interact and shape each other as routines evolve and change.

### **Routines and the Economics of Adjustment**

Evidence on the use of routines for judgment is important even in economics, because for many macroeconomic questions, Friedman’s (1953) “as-if” assumptions no longer hold. To understand market outcomes, we do need to understand microlevel behavior and endogenous processes of change. For example, price theory in economics presumes that firms adjust prices instantly in response to exogenous market forces, but a great deal of empirical evidence demonstrates that prices (and wages) are rigid: they adjust only slowly to macroeconomic shocks. One important theory of such price rigidity argues that price adjustment is a complex and costly organizational problem (Zbaracki et al. 2004) and treats the difficulties in responding to price shocks as “costs of adjustment.” According to Blinder et al. (1998, p. 21), these costs have become “...one of the main strands of new Keynesian theorizing” in economics. Yet economists have no data on how such costs might affect the process of adjusting prices. In response, economists have begun to study how managers adjust prices (Blinder et al. 1998).

Our research is faithful to approaches that place routines at the heart of such theoretical concerns (e.g., Nelson and Winter 1982) but incorporates—rather than sidesteps—the economic questions. We show how both economic and organizational variables are important. First, ongoing performances prescribe a range for changing prices. Within that range, the two functional groups considered the economic variables, changed prices, and did not engage the organizational variables. For small price changes, rigid routines thus permit flexible prices. Beyond a point, however, prices are no longer flexible unless routines are flexible. For the larger change, the two groups had to confront their different assumptions about the market, which led to debates about the ostensive aspects of the routines, which then led to questions about the structure of the firm. The economic variables engaged the organizational variables, so prices could not change until truces collapsed and re-formed. Given our findings, we would predict limited price rigidity within the range and considerable price rigidity outside the range.

Our findings make the practice of economics an organizational problem. We show how understanding routines for price adjustment sheds light on important

macroeconomic problems such as price rigidity (Blinder et al. 1998, Zbaracki et al. 2004). We thus invert the traditional understanding of the price system. Economic theory presumes that the price system is fundamental and organizations are second best (Gibbons 1999), but we show how organizations and routines make the price system work.

## Conclusion

We use an ontology of the routine that incorporates both the ostensive and the performative to analyze the routine as truce. We show that interests and information emerge out of specific performances in specific places at specific times. We make several contributions to the existing literature. First, we show how interests and information are intertwined in existing performances of the routine. A “vocabulary of motives” (Mills 1940) inhabits the ostensive aspects of routines that individuals hold. Depending on performances, that vocabulary affects the meanings of the most basic terms. Second, we show that the routine as truce can encompass a range of conflict, from conflict contained by the truce to conflict that risks subverting both functional interests and organizational stability.

Our findings also show how attending to these internal dynamics can make the routine relevant to other theoretical problems. First, we show how the formal knowledge of economics is valuable as an artifact (Bechky 2003a, Pentland and Feldman 2005) in resolving ambiguity after the collapse of the truce. Economic language serves as an apparently objective model for new routines, a myth giving the appearance of rationality (Meyer and Rowan 1977). Second, we show how decision making and economics are intertwined in the routine as a skilled performance. Our findings thus move toward a theory of routines that can incorporate problems such as conflict and cooperation (Gavetti et al. 2007). Third, our findings highlight how organizational research on routines can help resolve questions about price rigidity in new Keynesian macroeconomics (Blinder et al. 1998), the theory used to address important questions of how the economy responds to shocks. We suggest that organizations are not second best to the markets. Organizations are essential because routines are the basis of the price system.

More generally, our approach shows how routines can shed light on an important problem: how social science theories influence work and managerial behavior (Ferraro et al. 2005, 2009; Felin and Foss 2009). We studied price adjustment, so our findings focused on economics. Similar problems can be found in other disciplines. For example, how do actors employ financial routines to manage risk, accounting routines to evaluate firm performance, and operations routines to manage quality? These are all fundamental problems of stability and change in firm behavior, but they are the work of routines and the work of the organizations and they should be studied as such.

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