What Goes Around Comes Around: Understanding Trust–Value Dilemmas of Market Relationships

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The emerging cultural, societal, and environmental milieu of the twenty-first-century marketplace presents coping challenges for even strong and well-established companies. Few, if any, attempts have been made to examine systematically a firm's symbiotic link with society by focusing on the complexity and interconnectedness of its disparate market relationships. To facilitate a grounded approach to such modeling, the authors use a trust–value framework to analyze market relationships, the interconnections among them, and the trust–value dilemmas that arise in the context of two case studies: (1) the 3M company's decision to pull Scotchgard from the market and (2) the Los Angeles Unified School District versus the Coca-Cola Company regarding the sale of soft drinks on school premises. The authors chronologically assembled and systematically analyzed data from public, secondary, and industry sources, using relationship marketing theory principles to develop the individual case studies. The analyses indicate that the trust–value framework is a useful foundation for theorizing and empirically examining the complexity of a firm's market relationships by revealing interesting trust–value dilemmas and dynamics that connect the disparate relationships. The authors discuss implications for research and practice.

Firestone, Prudential, Nike, Brown & Williamson, Bayer …. Increasingly, even the well-established firms have faltered in coping with the dilemmas that arise from their diverse market and societal relationships (Business and Human Rights Resource Center 2004; Hutter and Power 2002; Martin 2002). These dilemmas often stem from several converging factors, including scientific and communication advances that illuminate previously unrecognized causes of societal concerns (Colborn, Dumanoski, and Myers 1997; Martin 2002), increased visibility and understanding of human rights abuses and environmental threats (Kemp 2001; Moore 2003; Smith 2003), and an electronically networked global society capable of sharing information and mobilizing citizens worldwide (Baron 2003; Manheim 2001). As a result, the complexity and interconnectedness of market relationships are surfacing as the defining realities of the twenty-first-century marketplace (Hollender and Fenichell 2004). As in the case of the previously listed firms, these realities can irreversibly and unexpectedly alter market dynamics and relationships, necessitating such actions as changes in management and market practices and even abandonment of products and markets.

Despite the significance of this emerging marketplace, few if any marketing frameworks and models exist to analyze, explain, and predict its dynamics and dilemmas. Often, contemporary studies of market exchanges and relationships are characterized by a decompositional approach, in which one set of market relationships (e.g., firm–consumer) is examined separately from another set of market relationships (e.g., firm–society). This separation is evident in different models, methodologies, and motivations of research and researchers and is perpetuated by institutional (e.g., separate special interest groups, conferences) and inertial forces (e.g., separate bodies of literature). Attempts to model how these apparently disparate market relationships intersect to create market dynamics and dilemmas have been rare (cf. Wilkie and Moore 1999). However, a few recent studies have revived interest in a systems perspective that emphasizes complexity and interconnectedness. For example, Wilkie and Moore (1999) develop the dynamics of an "aggregate marketing system" that they posit includes a diversity of market functions, and they focus on the interplay among these functions and reveal insights into marketing's contributions that are often downplayed, even neglected, in much prior research. Such a systems view provides an integrated perspective of marketing's contributions to society.

Drawing a thread from this aggregate marketing systems perspective, this article takes an initial step toward proposing and using a framework for studying the interconnectedness of market relationships. Three aspects of our study are

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noteworthy. First, we use a common theoretical approach to examine a firm's diverse market relationships. Specifically, we draw from relationship marketing theory, which has emerged as a key organizing framework for much academic and managerial discourse in recent years (Anderson and Narus 1990; Doney and Cannon 1997; Dwyer, Schurr, and Oh 1987; Morgan and Hunt 1994b; Vargo and Lusch 2004). Relational exchanges are perceived as differing from transactional exchanges because they have a long-term orientation (Berry 1995), are motivated by mutual value gains through cooperation (Dorsch, Swanson, and Kelley 1998), and are facilitated and sustained by trust (Morgan and Hunt 1994a).

Second, we approach a firm's diverse market relationships through a lens of simultaneity and interactivity. Specifically, we draw on the work of Drumwright (1996), Hutt, Mokwa, and Shapiro (1986), Menon and Menon (1997), and Wilkie and Moore (1999) and focus on four nodes of a firm's key market relationships: (1) consumers who are, have been, or will be end users and/or buyers of a firm's products/services; (2) regulatory and institutional agencies that are entrusted by society to act as "guardians" of the marketplace; (3) commercial intermediaries that participate in vertical arrangements with the firm to create time and place value for the latter's products/services; and (4) noncommercial intermediaries that act as independent gatekeepers and/or activists and thus influence access (e.g., parents of schoolchildren, media, scientific community) and/or provide value through information (e.g., consumerist agencies, activist organizations) to end users and buyers. A distinctive aspect of our study is that we extend previous research by examining explicitly how a firm's market relationships across the preceding four nodes intersect and interact.

Third, we use a case study approach to examine the dynamics of disparate market relationships and the interactions among them. In the tradition of grounded research and to facilitate theory building, we systematically document, analyze, and interpret the longitudinal evolution and interconnectedness among the four key market relationships for two different firms—the 3M company and the Coca-Cola Company—as they respond to market events over a specific period of time (Simonton 2003). We selected these companies and their recent market events for developing our case studies because each highlights a set of dynamics that involve a firm's marketing efforts and the aggregate marketing system. Moreover, these case studies focus on different aspects of the challenges of understanding the marketing and society linkages. The 3M case examines safety issues of a highly valued product (Scotchgard), and the Coca-Cola case examines health issues posed to a vulnerable population by a highly popular brand (Coke). However, we do not aim to propose hypotheses and test them empirically in the tradition of a positivist approach. Such an approach is probably premature given the current lack of theory and models for a holistic study of market relationships. Conversely, case studies can be a useful approach for both theory building and uncovering the underlying mechanisms (Yin 2002). We offer a systematic, longitudinal analysis of relevant market events and relationships based on secondary sources to provide a foundation for future theory building.

A Trust–Value Framework for Understanding a Firm's Response to Market Events

We use a trust–value framework to analyze and draw theoretical, practitioner, and public policy implications from the two case studies (see Figure 1). The posited framework depicts a firm that is engaged in ongoing relationships with the four distinct previously noted groups. At each node, a trust and value dynamic that determines the health of ongoing relationships is operative. Moreover, the trust and value dynamics at each of the four nodes are interconnected through a network of informational and exchange flows. As such, what happens at one of the nodes potentially spills over to influence ongoing relationships at other nodes, and these interconnections collectively influence a firm's effectiveness, even survival, in the marketplace.

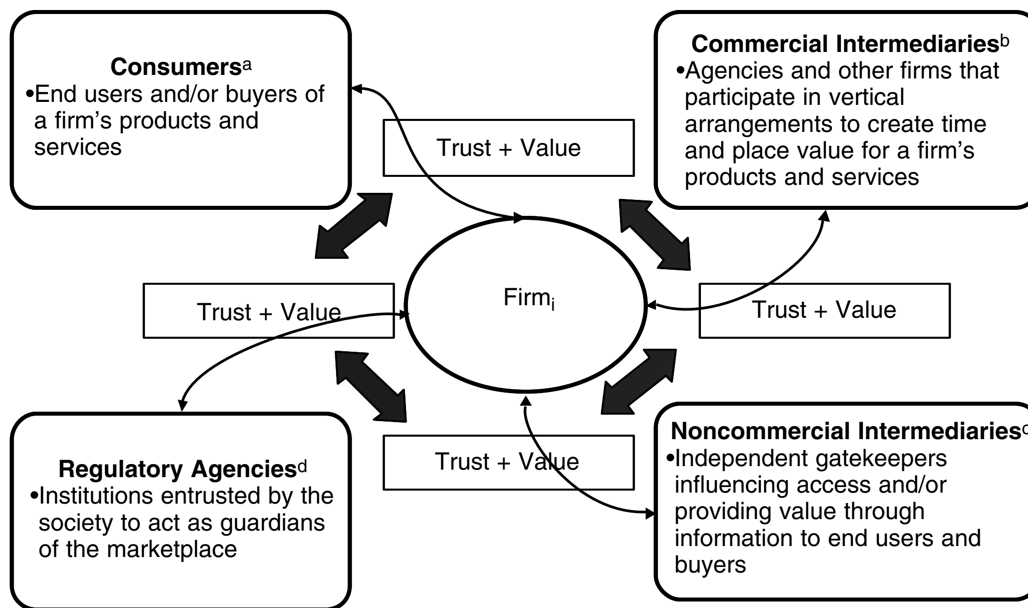
As we discuss the trust–value framework, we emphasize that we do not view the proposed framework as simply a normative tool to adjudicate what a particular firm should have done in a particular situation, nor do we view the proposed framework as the only meaningful approach for analyzing the circumflex of ongoing exchanges for a given firm. Rather, the proposed trust–value framework is an approach that is grounded in relationship marketing, and it facilitates a critical examination of the nature, strength, and interconnectedness of a firm's apparently disparate exchange relationships. Moreover, we demonstrate that the proposed framework offers a theoretically grounded approach for diagnosing a system of market relationships and provides insights into the dynamics and dilemmas of these relationships that hold theoretical, managerial, and public policy relevance. We discuss the framework and its theoretical foundations and then apply the framework in the analysis of two case studies.

Nodes of Market Exchanges

Although a firm may be engaged in relationships with several distinct groups, the four previously mentioned groups are germane to our framework. Foremost among them are the end users and buyers of a firm. We use the term "consumers" to refer to those people, firms, or agencies that (1) presently maintain an active and ongoing relationship with a firm through their buying behaviors and patterns, (2) have maintained a relationship with a firm in the past but do not currently have an ongoing relationship, and (3) are potential buyers in the market who might develop and maintain future relationships. Through a firm's communications (e.g., advertising), social involvement (e.g., philanthropy), market practices (e.g., guarantees), product/service delivery and management (e.g., new product introduction), and a host of other market actions, a firm encourages, supports, maintains, and develops exchange relationships with its consumer base.

Commercial intermediaries, such as suppliers and distributors, are another important group with which a firm maintains ongoing exchanges. We use the term "commercial intermediaries" to refer to firms, agencies, and organized units that maintain an active and ongoing relationship with a firm by participating in the marketing of its products and services to its end consumers. Through activities such as

Figure 1. Framework for Understanding Trust–Value Dilemmas of Interconnected Market Relationships



[a]Consumers are individuals, firms, or agencies that maintain an active, ongoing relationship with a firm through their buying behaviors and patterns, maintained a relationship with a firm in the past but do not currently have an ongoing relationship, or are potential buyers in the market that develop and maintain future relationships.
[b]Commercial intermediaries, such as suppliers and distributors, maintain ongoing relationship with firms. These are firms, agencies, and organized units that maintain active, ongoing relationship with a firm by participating in marketing its products and services to end consumers.
[c]Noncommercial intermediaries are individuals, agents, firms, or organized units whose actions and interest are motivated by a claim to protect consumers' interests. They do not have direct power, authority, or responsibility vested in them by society to regulate markets.
[d]Regulatory and institutional agencies are formal, institutionalized bodies, such as governmental and/or financial agencies, with which a firm may be motivated to maintain ongoing exchange relationships to protect its economic interests.

warehousing, distributing, packaging, assorting, and assembling, intermediaries facilitate access to markets and resources that are essential for the success of a firm and its strategy. Note that insofar as the focal firm's products and services are concerned, these intermediaries are primarily motivated by commercial interest; that is, commercial intermediaries aim to profit economically through their participation in marketing activities. However, when firms, agencies, or organized units use a firm's products and services as raw materials that they transform into new products and services for the market, they are not commercial intermediaries but rather industrial consumers. Recent research suggests that a firm's competitive strength depends largely on its relational bonds and partnering arrangements with its suppliers and distributors (Anderson and Narus 1990).

Noncommercial intermediaries represent a parallel yet distinct node of ongoing relationships for the firm. These intermediaries represent people, agents, firms, or organized units whose actions and interests are motivated by a claim to protect the consumers' interest; however, these intermediaries do not have direct power, authority, or responsibility vested in them by society to regulate markets. For example, schools and parents often act to protect the interests of children by influencing a firm's marketing access to schoolchildren. Similarly, the media, activists, scientific community, and certifying authorities (such as Consumer Reports) that review market products and services and certify them for quality and/or performance are other types of noncommercial intermediaries. Such entities do not directly control access to consumers, but their opinions modulate consumer preferences by providing information that is believed to be unbiased and useful in making market choices. As such, much like commercial intermediaries, noncommercial intermediaries either facilitate or impede a firm's access to its consumers. However, unlike commercial intermediaries, noncommercial intermediaries do not enter into vertical arrangements with the focal firm, and they are not motivated by profits; that is, noncommercial intermediaries do not ostensibly have a commercial interest in the marketing of the focal products/services. We recognize that in some cases, an entity may play multiple roles, sometimes assuming the role of a commercially motivated intermediary and at other times forsaking this commercial interest for a role that is more consistent with the motivation to inform, protect, and/or empower consumers. For example, school administrators whose ostensible role is to inform and protect schoolchildren by acting as noncommercial intermediaries (e.g., by restricting access) may develop commercial interests because they benefit from the sale of products/services on school premises and thus assume the role of commercial intermediaries. We do not believe that these multiple roles are a threat to our framework. Rather, we believe that these multiple roles illustrate additional trust–value dilemmas that enable us to explore how such entities manage these multi-

ple roles and to address the potential conflict that might arise as a result.

Finally, we view a firm's exchange relationships with regulatory and institutional agencies as another important node for analysis within our framework. Such agencies are usually formal, institutionalized bodies, such as governmental and/or financial agencies, that a firm may be motivated to maintain ongoing exchange relationships with to protect its economic interests. For example, a firm's relationship with a federal regulating agency can be a source of legitimacy, just as exchange relationships with its shareholders and financial institutions can be a source of capital (e.g., financial, knowledge). A key aspect of such relationships is that they are formalized and structured by institutional arrangements. Thus, a firm is likely to believe that ongoing exchanges with regulatory and institutional agencies are important and relevant.

Trust and Value Dynamics

At each of the four preceding nodes of exchange, trust and value dynamics are in play. Specifically, the degree to which a firm is trusted determines the extent to which the exchange partners reciprocate and commit to the development of a mutual relationship. Here, trust is defined as an exchange partner's expectation that a firm is dependable and can be relied on to deliver on its promises and is motivated by giving priority to the exchange partners' best interests. Often referred to as competence and benevolence dimensions, respectively, research shows that these dimensions are core aspects of exchange partners' trust evaluations (Doney and Cannon 1997; Singh and Sirdeshmukh 2000). Value is defined as an exchange partner's assessment of the net contribution of benefits obtained from the core functions of a product/service compared with the costs involved in the acquisition and use of a product or service (Grisaffe and Kumar 1998; Sirdeshmukh, Singh, and Sabol 2002). This definition is consistent with Oliver's (1996) conceptualization of value as a function of receipts minus sacrifices, and it focuses primarily on an economic assessment of the exchange relationship.[1] In contrast, trust is embedded in the social aspect of exchange relationships. It is possible to construe value broadly so that it includes both economic and noneconomic (e.g., social) benefits and costs involved in market exchanges. We depart from this broader perspective and conceptualize value in terms of benefits that result from core functions of a product or service that can be economically evaluated (e.g., savings in time, effort, money) and costs associated with the consumption of products/services. Such a conceptualization is useful because it maintains a distinction between the economic and social aspects of market exchanges. For our study, the use of broader conceptualizations of value is less appealing because they tend to encapsulate if not obfuscate these distinctions. As we discuss subsequently, when trust and value are conceptualized in distinct terms, they pose dilemmas in market relationships that hold significant relevance.

In general, a firm's exchange partners are more motivated to reciprocate and support the growth of ongoing relationships if they perceive that a firm's trust and value contributions are in balance and are high; that is, when both trust and value are high, a market relationship is likely to be healthy and self-sustaining. Conversely, low trust–low value market relationships that neither foster and sustain trust nor deliver value are eventually doomed. However, as dynamic systems, trust and value contributions may rarely be in perfect balance. As markets evolve, as technology shapes and reshapes markets, and as firms respond to environmental and market forces by taking market actions, the trust–value equation is perturbed, and the balance shifts in unpredicted ways. This necessitates a continuous assessment of trust–value dynamics in a firm's market relationships.

In this dynamic view, imbalanced trust–value relationships usually present dilemmas to the firm that involve trust–value trade-offs, and how a firm handles such dilemmas influences the long-term sustainability and health of its market relationships. We argue and show that it is possible to evaluate a firm's position in the market and its future potential by simultaneously analyzing the trust–value contributions at each of the four nodes of ongoing exchanges and directly considering the dynamic interconnectedness among them.

Although we do not explicitly include competition in our framework, it is nevertheless accounted for implicitly. Specifically, because a firm's value proposition is evaluated by its exchange partners relative to an alternative (i.e., competition), the focal firm is constantly in the process of weighing its own trust–value balance against its competitors (see n. 1). In turn, each competitor faces a market system with four nodes of trust–value exchanges (see Figure 1). Together, these systems shape the trust–value dynamics of the entire industry.

We provide a trust–value evaluation of two firms that encountered market challenges: 3M's Scotchgard pullback and Coca-Cola versus the Los Angeles Unified School District (LAUSD). Each case analysis addresses a specific period and situation to contextualize analysis and to facilitate data collection.

Data Sources and Extraction

We used four sources of data for the purposes of our case analyses: (1) popular business magazines and newspapers; (2) company reports and materials; (3) reports and studies by federal, United Nations, and noncompany sources, including articles published by regulatory agencies (e.g., Food and Drug Administration [FDA], World Health Organization [WHO], Environmental Protection Agency [EPA]), consumer watchdog groups (e.g., Center for Science in the Public Interest), and even scientific journals (e.g., *Chemical Week*); and (4) financial data obtained from independent sources, such as the Investext database, Moody's reports, Yahoo Finance, and Bloomberg. For the first source, we used the ABI/Inform, Business Source Premier, LexisNexis,

[1]We recognize that both trust and value assessments do not occur in absolute terms. Rather, such assessments are likely to involve some comparison standards. For example, comparisons with benefits/costs obtained from competitors are inevitable. Likewise, these evaluations are time dependent; that is, exchange partners are sensitive to changes (e.g., increases or decreases) in trust and value over time. It is difficult to determine whether these evaluations are more sensitive to competitors or to time. We suspect that in ongoing exchanges, the relational partners may be particularly sensitive to time-dependent changes in the trust–value evaluations. However, we leave this issue open for further empirical/conceptual development.

and *The Wall Street Journal* databases, and we searched for relevant articles published during the target period using a series of keywords that were relevant to the specific company situation. We obtained news articles from major local and national publications and outlets and from specific trade publications. We downloaded company annual reports and strategy materials from company Web sites, and when necessary, we contacted companies for additional information. Finally, we also obtained financial data on share prices, revenues, and profits when feasible. If financials were not broken down for the relevant product line, we obtained data from market and financial analysts' reports.

A total of 105 and 116 articles, reports, and materials were identified as relevant for the 3M and Coca-Cola case analyses, respectively. Several steps were necessary for the extraction of information from the collected materials. First, the collected materials were examined to identify the key articles and eliminate those that were redundant or not directly relevant to our problem. Teams of two researchers each reviewed the materials separately and converged on the selected set of key articles through discussion and iterative review. Second, the same teams reviewed the key articles for content and extracted factual information for tabulation. Factual information was defined as specific events, disclosures, announcements, and/or actions taken by the firm and/or one of its exchange partners that related to the situation under study. Factual information formed the basis of our analysis, though opinions, commentaries, and assessments of experts, company officials, and/or other interested or noninterested parties were considered in the interpretation of the data. Third, the extracted information was tabulated chronologically. In so doing, events, disclosures, announcements, and/or actions that occurred before the target period were also recorded if they were referenced in the selected key articles and had (in the team's judgment) a bearing on the situation under study. Fourth, the teams met to scrutinize the tabulated information critically and identify any gaps. Teams then returned to the database of articles or sought additional information to fill these gaps. This step was repeated iteratively. The resulting extracted chronology of events for each case study was then systematically organized and analyzed.

We next interpret the chronology of events for each case using the trust–value framework (see Figure 1). We identify key themes from each case at a higher level of abstraction to enable discussion of points of integration and distinction when comparing the two cases. We use verbatim statements from source materials when useful. In many examples, the Internet source materials did not include page numbers, though we provide a full citation. Therefore, we include specific page numbers for verbatim quotation only when they are available from source materials.

3M's Scotchgard: The Pullback

On May 17, 2000, both *The New York Times* and *The Wall Street Journal* announced that the 3M company would discontinue production of its popular fabric protection product, Scotchgard (Barboza 2000b; Tatge 2000). On the same day, 3M's share price rose, closing at $90.06, up $4.125 (Brown and Mayer 2000). This quiet action actually followed 30 years of research that reflected a concern both in the scientific community and within 3M about the health and environmental safety of Scotchgard and related products. How did 3M maintain credibility and trust despite its apparently abrupt decision to withdraw the product? What did the company do to weather this situation and emerge essentially unscathed? We examine these questions by analyzing the chronology of events (see Appendix A) using the trust–value framework (see Figure 2).

3M and Its Consumers

3M introduced Scotchgard in the mid-1950s (Hill and Lederer 2001). At the time, 3M was well on its way to becoming one of the most recognized consumer brands worldwide (Hill and Lederer 2001; Smithers 1953; Weber 2000). This company had long nurtured a reputation for not only innovation and quality but also social responsibility. It had been a pioneer in worker rights and environmental stewardship, ranking among the first to establish formal policies and programs in these areas (Amato 2000). As 3M's chief executive officer James McNerny (2004) notes,

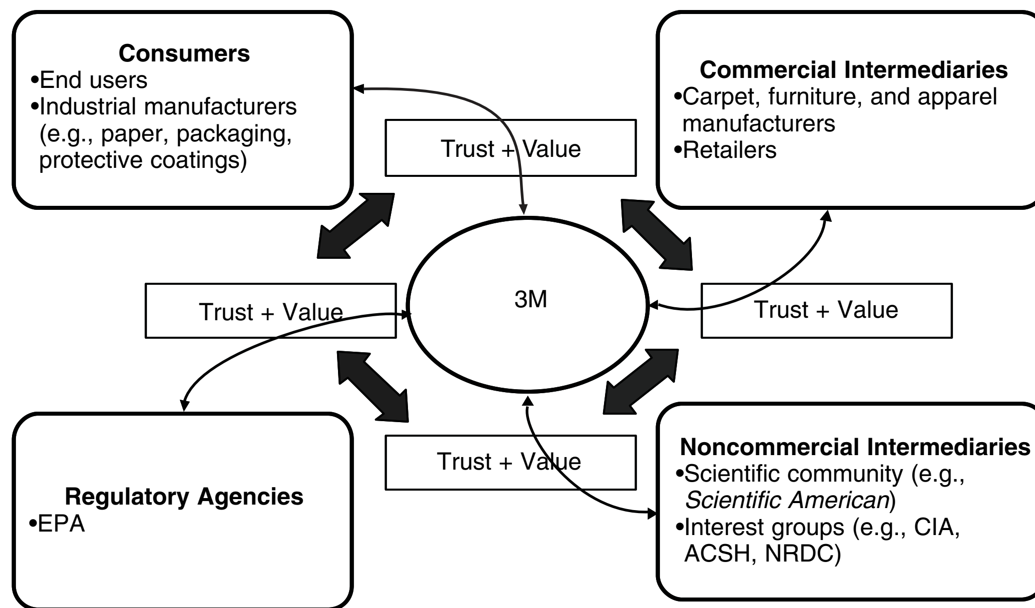
> For a hundred years, the people of 3M have provided innovative and useful products to generations of satisfied consumers. 3Mers have also recognized that the company's long-term success springs from adopting and implementing the principles of sustainable development: stewardship to the environment, contributions to society and to the creation of economic value and worth.

The Scotchgard fabric protector provided a remarkable economic value. For example, for a small fraction of the cost of an item of clothing, furniture, or carpet, an individual consumer could purchase an aerosol can of Scotchgard at any grocery store and spray it on an item to protect it against spillages and other common disasters that could otherwise prove ruinous. Perhaps equally important to the product's introduction, however, was that Scotchgard came from a trusted manufacturer that could credibly offer an inexpensive product with the unnatural ability "to repel nearly anything people threw at it" (Bjorhus 2003, p. 1).

The consumer market so enthusiastically embraced Scotchgard fabric protector and related products that, in a short time, 3M had created "an entirely new product market," of which it became and remained the market leader (Riecher 2000, p. 6). Scotchgard was deemed to be one of the most profitable products in 3M's history (Quinn 2000) and one of the company's top seven brands (Hill and Lederer 2001), and it was so widely known by the mid-1990s that its name was being used as a verb. A 1998 study showed that 94% of consumers were aware of Scotchgard and would pay a premium price for it (Dolliver 1998). Nonetheless, because the products' actual uses were apparently less well known, 3M undertook an extensive branding and advertising campaign in 1998–1999 to "refresh the franchise" (*Home Textiles Today* 1999, p. 38).

Thus, the consumer market was unprepared when, in May 2000, 3M suddenly announced that it would phase out all of its products based on its perfluorooctanyl chemistry—well over 100 products, including Scotchgard. Yet the announcement was reassuring: 3M, a responsible corporate citizen, was taking a precautionary measure, thereby placing the interests of its consumers and the general public above its own self-interest:

Figure 2. 3M Scotchgard: Trust–Value Dilemmas of Interconnected Market Relationships



Notes: CIA = Chemical Industry Archives, ACSH = American Council on Science and Health, and NRDC = National Resources Defense Council.

> While this chemistry has been used effectively for more than 40 years and our products are safe, our decision to phase out production is based on our principles of responsible environmental management…. Sophisticated testing capabilities—some developed in only the last few years—show that this persistent compound, like other materials in the environment, can be detected broadly at extremely low levels in the environment and in people. All existing scientific knowledge indicates that the presence of these materials at these very low levels does not pose a human health or environmental risk. (*3M News* 2000, p. 1)

As 3M had hoped, this announcement was well received by the consumer market and general public. Media coverage was wide but subdued and generally positive (Grugal 2003). Moreover, although the initial announcement did not imply that replacement products were imminent, 3M was able to introduce newly reformulated consumer products only 16 months later (Black 2001) and experienced no change in the public's attitude toward the Scotchgard brand:

> 3M and Scotchgard had enough equity built up with consumers over the years to take the hit, which generated relatively little media attention. And there was no clear side effect to dramatize environmental concerns.… It barely made a dent in the brand's image. (Bjorhus 2003, p. 1)

The situation was somewhat different for industrial consumers. Scotchgard-related products were widely used in paper and packaging protective coatings (including snack-food and pet-food bags); in industrial surfactants, additives, and coatings; and in firefighting foams and some pesticides. By 2000, approximately two-thirds of 3M's U.S. production of compounds that used the Scotchgard chemistry were destined for these industrial applications (Auer 2000). For the industrial buyers, a priority attribute was economic value, as a result of Scotchgard's high-quality performance at a competitive price. The product phaseout "left a large hole" in the paper market (Sim 2002, p. 32) because other companies could not offer protective-coating products with the same affordability (Koltzenburg 2001). Although a smaller market, the industrial fire protection industry was left in a similar situation. It had depended on 3M for a key component used in firefighting foam because of its extraordinary effectiveness (Riecher 2000), and it estimated that a substitute could take as long as eight years and $30 million to develop (Hague 2002). Thus, although the withdrawal of Scotchgard products was barely noticed by the consumer market, it "stunned industrial clients" (Bjorhus 2003, p. 1). To minimize the negative impact, 3M proposed to the EPA an "extended phaseout period" for many of its products in the industrial surfactant category, acknowledging that these products may be "irreplaceable" in many applications (Weppner 2000a, p. 6).

Therefore, 3M faced different types of trust and value dynamics with its individual and industrial consumers. When evidence of long-term health and environmental risks emerged, 3M could no longer continue to provide the value that Scotchgard offered and merit the trust it had claimed as a responsible environmental steward. By a preemptive product withdrawal, 3M was able to maintain, if not increase, the trust of its consumer markets overall, even though those markets lost the value that this product line provided. Moreover, the company subsequently restored much of that value with the introduction of a new (though reportedly less effective) Scotchgard formulation (Bjorhus 2003). In contrast, industrial consumers were more highly dependent on these products' value than was the consumer market; thus, the unexpected withdrawal had the potential to increase their costs and decrease the value of their own products. In

upholding the trust of its consumer markets, 3M was forced to risk both trust and value with its industrial consumers. In response, 3M proposed to the EPA an extended phaseout period that would minimize the effect of the withdrawal.

3M and Its Commercial Intermediaries

3M's situation with respect to its commercial intermediaries was similar to the situation it faced with its industrial consumers. However, unlike industrial consumers that used Scotchgard to produce new products (e.g., firefighting foam), these intermediaries served as retailers or distributors of the Scotchgard products, which were sometimes applied to other products (e.g., carpets) before purchase by the end consumer. Commercial intermediaries included carpet, apparel, and furniture manufacturers, as well as stain protection companies and retailers. For these companies, both value and trust had been paramount in their relationship with 3M. They were selling a well-known brand, Scotchgard, as an individual product itself or as added value to their own product. For these intermediaries, Scotchgard offered economic value by providing a proven benefit for a reasonable cost along with brand trust and familiarity. Because consumers had trust in the brand, commercial intermediaries' use of Scotchgard products created spillover trust effects for the intermediaries' products and services. "Everybody made money off of it," said the owner of a supplier of fabric-protection products to upholsterers and furniture dealers (Emerson 2000, p. 16).

When 3M announced the withdrawal of Scotchgard products with no assurance of replacement products, its commercial intermediaries were deprived of a reliable source of revenue as well as the value-added to their product offerings. A furniture warranty provider that was forced to use alternative products notes, "We received no advance notice from 3M" (Kidd 2000, p. 1), and a carpet consultant comments that the withdrawal of Scotchgard was "a pretty big hiccup" for the industry (Bjorhus 2003, p. 1). Nonetheless, the final agreement between 3M and the EPA allowed commercial intermediaries to order new stocks of the products that would last them for about a year after the withdrawal (Devine 2000). Moreover, 3M vowed to work with them to develop and test alternatives or to help them find other materials to use (Emerson 2000). Many commercial intermediaries simply moved to competitors' products (Gabbard 2000), trying to explain the 3M decision to consumers in the best possible light.

Therefore, 3M's withdrawal of Scotchgard resulted in clear and substantial value loss for its commercial intermediaries and may have temporarily undermined their trust in 3M, in large part because 3M did not clearly announce its intention to create replacement products at the time of withdrawal. Nonetheless, many commercial intermediaries respected the decision and played a key role in reassuring and educating the consumer market. As a major furniture chain executive said,

> They probably could have fudged and hedged, protested and dodged for five or ten more years arguing with the EPA and other people as to whether this is a really serious matter, but they did the right thing and did it early. I think they should get extra points in the marketplace for doing that voluntarily and being such good corporate citizens. (Emerson 2000, p. 16)

3M and Its Regulatory and Institutional Agencies

The company's relationship with the EPA was central to 3M's decision to pull back Scotchgard. As a representative of the public interest, the EPA serves not only to eliminate environmental risk but also to balance risk and value, because the public may choose to accept certain risks to enjoy certain benefits; thus, the agency both shapes (through scientific inquiry) and reflects public opinion. The EPA's involvement in the Scotchgard saga began early in the product's history as scientific interest in the environmental proliferation of chemicals grew. With the passage of the Toxic Substances Control Act in 1976, the agency's monitoring process became formalized, requiring chemical companies to test and report on potential environmental and human-health hazards of their industrial chemicals.

3M studies, which were made available to the EPA and Chemical Industry Archives as a result of this legislation, show that the company regularly commissioned studies on the chemistry on which Scotchgard is based—namely, the family of sulfonated perfluoro chemicals, including a key chemical in question, perfluorooctane sulfonic acid (PFOS). 3M also reviewed and responded to other scientists' work on PFOS and other organic fluorides and filed regular reports with the EPA (for key studies and a time line of events from product introduction through phaseout, see Appendix A). These actions, along with the company's positive environmental record, apparently fostered a positive relationship between the company and the EPA (Riecher 2000). Moreover, although these studies consistently showed environmental dispersion of PFOS, no adverse impact on human health was confirmed. Therefore, both 3M and the EPA assumed PFOS to be essentially inert (Weber 2000).

As advanced testing technologies became available in the 1990s, the effects of PFOS contamination became apparent. In 1997, blood-screening tests showed the presence of PFOS in blood banks throughout the United States and Europe. These findings, combined with PFOS's resilience ("It is so hardy that no one knows when, if ever, it will break down"; Weber 2000, p. 96), prompted concerns that products based on the PFOS chemistry would eventually have to be abandoned.

These developments must have left 3M executives in a quandary because 3M was the only U.S. manufacturer of PFOS products; replacement products had not yet been created, and these products were providing revenue growth at a time when 3M was struggling (Inch and Gardinier 2002). While working to develop replacements, the company launched a new Scotchgard ad campaign and ordered more tests. These tests brought sobering results: (1) animal testing in September 1998 showed that the offspring of rats exposed to heavy doses of PFOS died within days of birth, (2) an environmental study presented to the company in February 2000 reported evidence of PFOS in the tissue of animals throughout the world, and (3) a March 2000 study reported that monkeys heavily dosed with PFOS died after suffering gastrointestinal problems and convulsions.

Collectively, these studies, some conducted by 3M itself, provided converging evidence about the adverse consequences of continued PFOS production and led 3M, in con-

sultation with the EPA (Weppner 2000b), to announce the phaseout effective immediately. In doing so, the company appears to have not only avoided a protracted dispute with the EPA but also reinforced its reputation as a company that was willing to put the public's interest above its own financial gain. These actions strengthened its relationship with a critically important regulatory agency and increased the agency's trust in the company. In praising the company as unusually responsive to the public interest, Mary Dominiak of the EPA's Office of Pollution Prevention and Toxics observed,

> Companies tend to be more cooperative if they are introducing a new product, not defending an established market. This type of move on the part of 3M—voluntarily phasing out a product—while not absolutely unique, is not that common. It is something that we applaud. 3M generally has a pretty good environmental record. (Riecher 2000, p. 10)

Nonetheless, events between 1998 and 2000 show 3M struggling to balance its own interests and those of its consumers, commercial intermediaries, and the EPA. Evidence eventually mounted to a point at which the EPA became the company's focal relationship. 3M "made the decision not to consult extensively with our consumer base until we had reviewed our phaseout plan with EPA" (Weppner 2000b, p. 5), though notably, it did request that the EPA consider and consult affected parties in structuring the phaseout. In the ensuing years, 3M continued to report to the EPA its findings from ongoing research on the Scotchgard chemistry (see Appendix A).

3M and Its Noncommercial Intermediaries

The scientific community served as an important noncommercial intermediary in the Scotchgard case by following and participating in the monitoring of PFOS (see Appendix A) and serving as an independent source of information about Scotchgard's safety. Other noncommercial intermediaries—nongovernmental, activist organizations that monitor the actions of both regulatory agencies and firms—also emerged as significant, providing their own interpretations of the scientific data on the PFOS chemistry. The role of two such organizations is noteworthy. The first, the American Council on Science and Health, a nonprofit and largely probusiness consumer education consortium, condemned the 3M decision as premature and unnecessary, a decision that forced the public to relinquish the genuine value of an important product to eliminate an imagined risk:

> The fact that a major corporation would decide that the costs of defending their products against baseless, unscientific charges would be higher than the profits to be made should send chills through every corporate and consumer spine in America. What useful products will American consumers be denied next? Given that we can now detect just about anything in blood samples, will companies be pressured to withdraw sunscreens, shampoos, foods, cleaning solvents and everything else in our pantries and utilities closets? (Whelan 2000)

The second, Chemical Industry Archives (2001), a project of the public interest organization Environmental Working Group, presented an opposing view:

> The more than 1,000 documents in EPA's Administrative Record on Scotchgard—some 29,000 pages of material—show clearly that 3M knew its products were in the blood of the general population as early as 1976 and had detected PFOS in their own plant workers as early as 1979. 3M waited more than 20 years before agreeing, under threat of regulatory action by EPA, to remove this health hazard from the marketplace—hardly responsible behavior.

3M countered by arguing that the scientific evidence had only recently confirmed genuine risk and persistence of PFOS and that its abandonment was appropriately precautionary rather than inappropriately compliant. In the popular press, 3M's position began to take hold, though the noncommercial intermediaries received little visibility. A respected environmental action group, the Natural Resources Defense Council, praised 3M for "removing the product before there is absolute scientific proof of harm.... If companies had taken the same kind of precautionary action with DDT and PCB, then we wouldn't be in the same bad situation we're in now" (Brown and Mayer 2000, p. A1). Likewise, *Scientific American* observed, "To its credit, 3M decided to phase out its flourishing $300-million-a-year fluorochemical business" (Renner 2001, p. 18). Others also noted that independent scientists praised the withdrawal action (Koltzenburg 2001).

The Interconnections Among Disparate Exchange Relationships

In the dynamics across the four disparate nodes, the relationship between 3M and the EPA appears central to the Scotchgard pullback. During the four decades that led up to the pullback decision in 2000, 3M worked closely with the EPA and regularly shared research findings. 3M enhanced its trust with the EPA by its good faith efforts to reach an acceptable decision, albeit one that was apparently delayed between 1998 and 2000. In 1998, struggling with abandoning the value offered by the Scotchgard formulation, 3M commissioned additional studies and sought to develop replacement products while initiating an advertising campaign to support the Scotchgard brand. These contradictory actions probably reflect an internal struggle within 3M to cope with the trust–value dilemma presented by the product's PFOS chemistry. Although the EPA was aware of Scotchgard products' value to consumers, it concluded that the growing evidence of PFOS contamination undermined the products' trustworthiness. Fully cognizant of the value and trust trade-offs, 3M went along with the EPA to forgo future rents from a valued product category. In turn, the EPA publicly supported the timing of the product's withdrawal, thus legitimizing 3M's actions and reinforcing the company's image as one that would put the public's welfare ahead of its economic gain.

However, for 3M's major revenue sources—namely, industrial consumers and commercial intermediaries—the sudden action not only resulted in loss of value but potentially undermined their trust as well. Aware of this, 3M sought to mitigate trust depletion by seeking the EPA's approval for a lengthy phaseout period for its highly dependent industrial buyers. 3M built a buffer of about one year of transition time for its commercial intermediaries. In other words, although the overarching decision was made to maintain public trust, 3M acted to minimize the effect of the

trust–value trade-off by delaying it in the short term.[2] 3M also moved quickly to correct the impression that replacement products would not be developed by introducing a new and expanded line with unusual speed.

In the short run, 3M lost money. In 2000–2001, revenue growth for the specialty materials segment dropped by 14%, and Morgan Stanley Dean Witter estimated that the Scotchgard phaseout could reduce 3M's earnings per share by $.04 to $.05 in 2001 (Ottenstein and Scheller 2000). However, the Scotchgard product line was estimated to represent approximately $350 million in sales, accounting for only 2% of 3M's total revenues (Weber 2000), and the company was otherwise performing well when the withdrawal occurred. Had the Scotchgard products contributed a significant proportion of 3M revenues, the decision would undoubtedly have been much more difficult, though the trust–value implications may well have been much the same.[3]

The withdrawal decision appears to have paid off for 3M. "I don't think I've ever seen a company pull a product off proactively like they did and replace it with completely new chemistry as fast as they have done," a research analyst commented (Padley 2002, p. 1). Although exiting the paper and packaging markets (Padley 2002), 3M has sustained and rejuvenated the Scotchgard brand by focusing its innovative prowess on the development of new product formulations under the Scotchgard name (see Appendix A). 3M now ranks among the most respected companies, with particularly high marks for management of environmental resources (*Business World* 2003), and by 2003, its share price had reached an all-time high (Martin 2003).

[2]In effect, this represented a short-term trade-off of public health in the interest of 3M's maintaining some trust and value in the eyes of its industrial buyers and commercial intermediaries, though the public health risk posed by this compromise was unknown and probably marginal.

[3]DuPont is now under EPA investigation for the safety of its Teflon products, which are manufactured using perfluoro chemicals. The agency is charging the company with withholding evidence about the health and environmental risks of the product; for DuPont, Teflon-related products produced approximately 10% of the firm's 2003 profits (Cortese 2004).

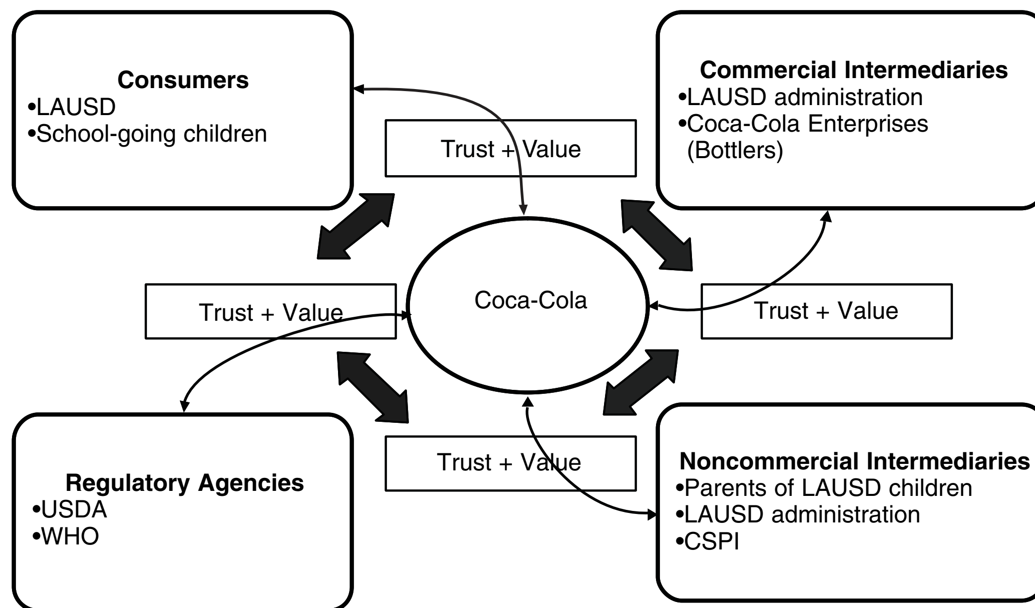
Coca-Cola Versus the LAUSD: The Power of Intermediaries

On November 17, 2003, reflecting a turnaround in its history of aggressive marketing tactics directed at the youth market, the Coca-Cola Company (Coke) announced a major change in how and when its beverages would be sold in schools (Devine 2003). Why this turnaround? We analyze the precipitating chronology of events (see Appendix B) using the trust–value framework (Figure 3).

Coke and Its Consumers

Although Coke attracts a wide variety of consumer segments, our focus is the youth segment, especially school-going children. Children ages 5–14 spend $35 billion each year and influence the spending of approximately $200 billion annually (Harvey 2000; Rosenberg 2001). In an aggressive effort to reach school-going children, Coke entered into exclusive 5–10 year contracts that involved large, up-front, and distributed payments to school districts over the contract period. In return, the schools stocked their vending machines exclusively with the company's products and

Figure 3. Coca-Cola: Trust–Value Dilemmas of Interconnected Market Relationships



Notes: USDA = United States Department of Agriculture, and CSPI = Center for Science in Public Interest.

guaranteed exposure to the company's advertising in schools. Referred to as "pouring rights," these contracts include a comprehensive strategy to attract children with logos on school equipment, Channel One, and the Internet, as well as advertising, contests, free samples, and coupons (Nestle 2002, p. 202). As Coke's spokesperson noted, "Our strategy is to put soft drinks within arm's reach of desire and schools are one channel we want to make them available in" (Pear 1994, p. A15).

This strategy to build strong relationships with children based on brand trust and value has considerable support in the literature. For example, Gorn and Goldberg (1977) show that in children ages 2–10, a single exposure produces favorable attitudes toward the advertised product. Brand awareness among children reportedly begins and continues to grow in the early years. More than two decades ago, Ward, Wackman, and Wartella (1977) found that the average number of soft drink brands that children in kindergarten to third grade could name increased from 1.2 to 2.4, and from third to sixth grade, it increased from 2.4 to 3.3. Likewise, children ages 10–13 who are exposed to beer commercials were found to hold more favorable beliefs about drinking, have greater knowledge of beer brands and slogans, and show an increased intent to drink as adults (Grube and Wallack 1994). Research has consistently linked exposure of children to televised commercials with actual choices for snacks and soft drinks (Galst and White 1976; Goldberg, Gorn, and Gibson 1978; John 1999). Notably, although children age 8 and older develop knowledge and skepticism about advertising, recent research suggests that these children fail to access this knowledge and develop counterarguments at the time of viewing (Brucks, Armstrong, and Goldberg 1988). From 1995 to 2002, Coke has been consistently ranked among the top 60 leading national advertisers, and much of its advertising is directed at the youth market (Brown et al. 2003).

In summary, Coke's exclusive contracts enhanced value within its consumer market, as is evidenced by its 44% market share (*Beverage Digest* 2004). Coke is rated the third most visible brand in the United States by the Reputation Institute (www.harrisinteractive.com). Because exclusive contracts are used to "erect powerful barriers to entry, build brand loyalties, and create additional advertising and promotional vehicles to further connect with the campus crowd" (Morrison 2004, p. 47), it can be inferred that Coke made a strong attempt to build trust and loyalty among school-going children through exclusive contracts. However, subsequent events and exposure disrupted its relationships with parents and school administrators. We examine this next.

Coke and Noncommercial Intermediaries

Parents of school-going children and school administrators act as gatekeepers and control access to schoolchildren. The LAUSD is the United States' second largest school district, with an enrollment of 736,675 students. A majority of students (70%) are from low-income Latino families, and more than 76% qualified for free or reduced price federal meals in 2000–2001. More than 25% of children in Los Angeles County are uninsured and lack access to preventive health care, creating a greater need for healthy alternatives in schools.

As we note in Appendix B, several factors contributed to the activist role of noncommercial intermediaries in the LAUSD. Between 1995 and 2001, several published reports focused on childhood obesity that could be traced directly to high sucrose consumption. The soft drink industry was a ready target for these problems because of the high sugar content of its products, and Coke, the leading brand in the industry, was easily identified with these concerns. The reports included a series of articles and news stories that revealed the aggressive tactics of the soft drink industry in general, and Coke in particular, that were directed at school-going children (Canter and Hudley-Hayes 2002; Consumer Union 1995; Dimassa and Hayasaki 2002; Henry 2001; Jacobson 1998; Kaufmann 1999; Manning 1999; Wohl 2001). On the basis of the data in these reports, the LAUSD decided to develop a healthy food policy and hired a technical consultant to analyze the nutritional content of the food in its schools. The consultant's report, which was released in July 2002, found foods sold in vending machines to be high in sugar, caffeine, and salt content and recommended that such foods be discontinued from school premises (Rosa et al. 2002).

A particularly troublesome aspect of pouring-rights contracts for parents and consumer advocates was the bonus incentives tied to soda sales (Kaufmann 2001). For example, Coke offered the schools a commission of 30% for each soft drink can sold compared with 15% for each noncarbonated drink sold (Day 2003). Higher commissions for soft drink sales coupled with bonus incentives for exceeding quotas resulted in many schools' initiating their own aggressive efforts to boost soft drink consumption on school premises. For example, in 1999, a widely publicized memo from a Colorado school administrator who signed himself "The Coke Dude" admonished the school district for not doing its fair share to attract more funds and offered prizes of $3,000, $15,000, and $25,000, respectively, to his elementary, middle, and high school principals. His memo read:

> We must sell 70,000 cases of product … at least once during the first three years of the contract. If we reach this goal, your school allotments will be guaranteed for the next seven years…. If 35,439 staff and students buy one Coke product every other day for a school year, we will double the required quota. Here is how we can do it…. Allow students to purchase and consume vended products throughout the day…. I know this is "just one more thing from downtown," but the long-term benefits are worth it. (Bushey 1999, p. 1)

Clearly, some school administrators valued Coke's financial kickbacks because they underwrote needed physical education equipment, computers, and sponsored activities for schoolchildren. For such administrators, Coke offered a highly valued proposition. However, for others, Coke's marketing tactics bred mistrust, and they remained skeptical of Coke's value propositions. The commissioner of the San Francisco School District wrote,

> It must be the dream of marketing executives. The law required your future customers to come to a place 180 days a year where they must watch and listen to your advertising messages exclusively. Your competitors are not allowed access to the market.

> The most important public institution in the lives of children and families gives its implied endorsement to your products. The police and schools enforce the requirement that the customers show up and stay for the show. The disturbing implications are numerous and profound. (Wynns 1999, p. 26)

In March 2001, sensing the mounting opposition to pouring rights, Coke announced its plans to withdraw from exclusive pouring-rights contracts and to maintain a presence in schools through other Coke products, such as Dasani bottled water and Minute Maid juice products. Jeffrey Dunn, Coke's president at that time, commented (Kaufmann 2001, p. A02),

> [A]ny benefits we might have gotten from the exclusive contracts have clearly been offset by the public discourse about commercialization in schools…. [E]ducation will be the big issue of the next ten years, and being on the wrong side of that debate is not where we want to be.

However, Coke did not offer any guidelines or a timeline for the implementation of its withdrawal plans (McKay 2001; Zernike 2001). Thus, this announcement did little to alleviate the problem, and local bottlers continued to enter into pouring-rights contracts with their local school districts in direct contradiction with Coke's announced policy (Kauffman 2001).

During this time, the LAUSD board initiated a debate on the soft drink contracts in its schools following demands by parents and consumer activists (see Appendix B). On August 26, 2002, a day before the LAUSD board was scheduled to vote on whether to grant such contracts, the Coca-Cola Bottling Company of Southern California, which had sponsored the LAUSD academic decathlon for the past 20 years, threatened to end its sponsorship if the vote was unfavorable (Gao 2002).[4] Previously, as reported on September 24, 2001, in compliance with the Lobbying Disclosure Act, Coke revealed that it had hired Holland & Knight, a public relations firm, to ward off federal restrictions on vending machines in schools (O'Dwyer Company 2001).

On August 27, 2002, the LAUSD board voted unanimously to ban the sale of soft drinks on its campuses, which included 677 schools with 748,000 students. Vending machines were required to offer only water, milk, and beverages with 50% juice and no added sweeteners. In addition, Coke remained uncertain about how to handle noncommercial intermediaries. As an industry expert noted, "One of Coke's chief challenges is determining how to sell and promote its products and remain in the good graces of parents" (Day 2003, p. B1).

Coke's struggle to balance its various relationships came into sharp focus when its opponents criticized Coke's lack of commitment. As Wohl (2001) notes,

> Ironically, Coke's move to disentangle itself from the schools has so far been less than successful. First, it was criticized by opponents of in-school marketing as a business decision designed primarily to let the company stay in schools despite a rising tide of opposition. Then, individual Coke bottlers largely ignored the order from the head office and continued to make exclusive contracts with schools eager to maintain their cash flow. To add to its problems, Coke had to worry about competitors like Pepsi jumping in and taking the business it has altruistically left behind.

Thus, Coke underestimated the degree of mistrust engendered by its actions among its noncommercial intermediaries, particularly parents. From the perspective of parents, the combined actions of Coke and its bottlers reduced the level of trust they had in Coke's motivations. In contrast, school administrators experienced diminished value due to the threat posed to the availability of Coke products on school premises. Thus, Coke's unilateral decision to back off from the exclusive deals without the consent of its bottlers only aggravated the situation. Admittedly, the LAUSD's role as a noncommercial intermediary motivated by noneconomic interests to act as a gatekeeper in controlling access to schoolchildren must be squared with its role as a market intermediary directly involved in commercial relationships with Coke to market its products to schoolchildren. We discuss this subsequently. The dual role of the LAUSD and the inherent conflict between these roles is a distinctive aspect of the Coke case study.

Coke and Its Regulatory/Institutional Agencies

The childhood obesity problem is an important issue for regulatory/institutional agencies. As the chronology in Appendix B reveals, in 1986 the federal government banned public schools from making foods of minimal nutritional value available in food service areas during meal times. In 1994, the U.S. Congress passed amendments to the School Lunch Act, requiring stricter controls on sales of minimal nutritional value foods in school cafeterias. However, nationwide, many schools violated federal regulations and left the vending machines unlocked during and after lunch recess.

Between 1998 and 2000, studies published by organizations such as the Center for Science in Public Interest, the U.S. Department of Agriculture (USDA), Centers for Disease Control and Prevention, and National Institutes of Health, as well as a report in *Lancet*, a British medical journal, linked soft drink consumption to obesity, bone fractures, and diminished cognitive development in children (Squires 2001). During the same time, the USDA placed soft drinks at the tip of its food pyramid for children ages two to six.

While these concerns mounted, legislative action in California was triggered by an unforeseen event. In April 1998, California State Senator Martha Escutia collapsed in her chair in the Sacramento Capital building as a result of insulin shock. Senator Escutia survived the collapse, and she initiated research on the link between junk food and obesity and its role in the onset of diabetes, especially in children. Alarmed by the childhood obesity figures, she introduced Senate Bill 19, a bill that restricts the sale of sweetened carbonated drinks during lunch hour in schools. Senate Bill 19 became a law in October 2001 (Tresniowski and Sheff-Cahan 2002). Several other bills followed to restrict the availability of soft drinks to schoolchildren (see Appendix B).

[4]According to Amy Dresser Held, the director of policy and communications for the LAUSD, the sponsorship was indeed withdrawn following the vote.

In May 2003, the Director General of the WHO, Dr. Brundtland, hosted the first formal roundtable meeting of WHO and senior food industry executives (including Coke) in response to an expert report on diet, nutrition, and prevention of chronic diseases released by the WHO and the UN Food and Agriculture Organization. These meetings aimed to develop joint programs with the food industry to encourage healthier diets and increased physical activity (WHO 2003). In her speech to the private sector, Dr. Brundtland singled out issues of nutrition labeling and marketing to children: "We want food companies to reassess what they are marketing to young children, and how they are going about it" (WHO 2003).

A trade group associated with the soft drink industry, The Sugar Association, demanded that the WHO conduct additional scientific review and vowed to use "every avenue available to expose the dubious nature" of the report, including asking members of Congress to challenge the United States' $406 million in contributions to the WHO (Brownell and Nestle 2004).

Apparently, the regulators never trusted the soda companies. They constantly worked to educate consumers to reevaluate the value that they derived from consuming soft drinks. Regulators apparently understood the value of the soda companies to schools in particular and the economy in general. However, by their lobbying actions to prevent lawmakers from interfering in their business, the soda companies eroded the regulators' trust in them. Collectively, this erosion of trust between the industry and regulatory institutions invited further market control and restrictions. Recently, Senator Leahy introduced a new bill in Congress to amend the Child Nutrition Act of 1966 to promote better nutrition among schoolchildren participating in the school breakfast and lunch programs. As these efforts make their way through the legislative process, the marketing to school-going children is likely to receive increasing scrutiny and restriction.

Coke and Its Commercial Intermediaries

Initially, Coke's efforts to withdraw from the school market were not welcomed by its distributors, because they underestimated the growing concern in the market. A spokesman for the Mid-Atlantic Coca-Cola Bottling Company said, "We will continue to listen to the needs of local school officials … where our local education partners are interested in the exclusive contracts…. We will have to listen to them" (Kaufmann 2001, p. A02). Most of Coke's bottlers were involved with local communities and school districts for decades. For them, the exclusive contract issue had been overblown. The bottlers were slow to react and tended to discount the concerns of parents and consumer advocates. However, as the criticism against pouring-rights contracts gained momentum and an increasing number of school districts banned soft drinks, the bottlers, including Coca-Cola Enterprises (CCE) (2003, p. 18), acknowledged the growing national concern:

> We have witnessed increased public policy challenges regarding the sale of our beverages in schools.… [T]he focus has more recently turned to the growing health, nutrition, and obesity concerns of today's youth.... [T]he impact of restrictive legislation, if widely enacted, could have a negative effect on our brands, image, and reputation.

Yet, self-interest, along with pricing and profit sharing arrangements, precluded the bottlers and Coke from working cooperatively to address the emerging concerns. Historically, Coke sold its concentrate to bottlers at a flat rate per volume unit, regardless of how its soft drinks were packaged and where they were sold. As a result, Coke's profits were tied to volume growth, whereas bottler profits were driven more by margins (Terhune 2003). Because margins are higher for products sold through vending machines, the bottlers' self-interest favored continued presence in the schools under exclusive contracts, which might explain the bottlers' reluctance to cooperate with Coke in its March 2001 decision to back off from exclusive school contracts.

A source of further conflict between Coke and its bottlers has centered on future expansion for the company. The industry growth has slowed and smaller quantities, such as 13-ounce plastic bottles and 8-ounce cans, are more profitable. These smaller containers offer less liquid volume for Coke and thus less value, but they have the potential to offer higher profit margins for the bottlers (Terhune 2003). These disparate incentive systems placed the interests of Coke at odds with that of the bottlers. Whereas Coke wanted to build trust with its noncommercial intermediaries by showing restraint and self-regulation of its marketing activities in schools, it did not explicitly acknowledge that its actions required marginal economic sacrifice on its part. Rather, it was the bottlers that were expected to bear the economic cost of Coke's efforts to build trust. Unfortunately, the bottlers that relied on the margins from sales at vending machines and of smaller containers were not willing to bear this cost and did not perceive any accrued benefit in adhering to Coke's public promises.

Realizing the potential of these misaligned incentives to foster further trust erosion, Coke is reportedly examining alternatives, including varying its price by package or sales channel or collecting a percentage of the bottlers' gross profits. Industry analysts believe that the new pricing agreement may promote more collaboration between Coke and CCE on product innovations and marketing (Terhune 2003). As an early evidence of this trend, on November 17, 2003, all of Coke's bottlers, including CCE, reversed their earlier positions and signed on to Coke's new "Model Guidelines for School Beverage Partnerships." The new policies (1) allow schools to place timers on vending machines to control their operation, (2) prohibit the sale of carbonated soft drinks to elementary school students during the school day, (3) charge the same prices for soft drinks and water, and (4) connect all promotional activities in schools to physical activity, academic achievement, and "positive youth development." To enhance the sustainability of these efforts, Coke established the Council for Corporate and School Partnerships (www.corpschoolpartners.org) that recently completed a report entitled "Guiding Principles for Business and School Partnerships," which provides detailed guidelines for companies and school administrators to enhance mutual value. The council also created a National School and Business Partnerships Award for recognizing exemplary partnerships between schools and companies. However, the Center

for Science in the Public Interest (http://www.cspinet.org/new/200209252.html) criticized Coke's effort as an attempt to "bolster corporate profits at the expense of kids' health and education."

The Interconnections Among Disparate Exchange Relationships

Although the preceding discussion portrays distinct and disparate exchange relationships for Coke, our analysis suggests that these are interconnected. Coke focused on school-going children, its future consumers, to build relationships that last a lifetime. By all accounts, it was successful in building its brand image and equity with the youth market (Rosenberg 2001). However, success with this market triggered a response from other markets. Parents and consumer advocates focused on the health consequences of soft drinks for children and the practice of exclusive pouring-rights contracts that ostensibly favored captive markets. The slow, hesitant, and initially oppositional response from Coke and other soft drink companies undermined the trust of parents and advocates. Triggered by the motivated efforts of parents and advocates, federal agencies and state and city school boards began to actively "police" the market by passing laws, restrictions, and advisories for the marketing of soft drinks on school premises.

As the tide of regulation grew, Coke realized the cost of mistrust, and on March 13, 2001, Coke announced that it planned to scale back its marketing efforts toward children. However, this action failed to curb the growing mistrust and to produce tangible outcomes on school premises. A key reason for this involved Coke's bottlers. Coke announced its plans in March 2001 to scale back marketing to children, but it did so without first securing agreements from its bottlers. In addition, Coke did not recognize that its bottlers, not itself, would bear the cost of the economic sacrifice for its trust-building efforts. Bottlers had little incentive to carry out Coke's plans. Thus, major bottlers resisted Coke's unilateral decision and continued to push their products on school premises, criticizing parents, advocates, and school boards for interfering in "free market" access and "unfairly" targeting soft drinks. These conflicting signals and actions along with the wide gap between Coke's announced policy and the ground reality of its products' distribution on school premises undermined parents' and advocates' trust in Coke. Rather, they had the opposite effect of fueling renewed efforts to contain Coke's marketing on school premises.

On November 17, 2003, more than two years after the initial announcement to curtail its marketing efforts on school premises, Coke reached an agreement with its bottlers to work jointly and cooperatively to implement its March 2001 plans. To win the cooperation and trust of its bottlers, Coke is reexamining and rewriting its contracts so that the pricing and profit-sharing mechanisms do not create a situation in which the market actions of Coke and its bottlers are in conflict and breed mistrust among its various constituencies. Moreover, in an effort to redefine its relationship with its youth market, Coke has recently introduced Swerve, a line of milk-based drinks and the first Coke beverage product to be sold exclusively in schools. An 11-ounce can of Swerve has 27 grams of sugar compared with 36 grams in an 11-ounce serving of Coca-Cola Classic and 16 grams in an 11-ounce serving of skim milk, 115 milligrams of sodium compared with the 46 milligrams in Coca-Cola classic and 162 milligrams in skim milk, and some added vitamins (Devine 2003). Swerve is cholesterol free and meets the certification requirements of the American Heart Association. It supplies 30% of the recommended daily intake of calcium and vitamins A and C. It contains as much fiber as a slice of wheat bread and fewer carbohydrates than low-fat chocolate milk.[5] Are these strategies likely to stem the negative spiral of trust? Whether Coke's recent efforts successfully rebuild trust with its consumers and bottlers or appear too little, too late to reverse the tide of mistrust created by its prior actions is uncertain at this time. What is certain is that resistance to marketing to children by soft drink companies is mounting, and the marketing of soft drinks on school premises has been irrevocably altered. In January 2004, the American Academy of Pediatrics recommended the banning of soft drinks from all elementary schools, and the Philadelphia school district banned soft drinks on its premises.

Discussion and Implications

Our study sheds light on three fundamental questions: (1) Is delivering value the primary function of marketing in organizations? (2) What are the nature, scope, and significance of trust–value dilemmas? and (3) Do a firm's disparate market relationships involving consumers and society function as relatively independent systems? In discussing the insights, we substantiate our arguments with reference to specific dynamics from our case studies and draw implications for future theorizing.

Understanding the Marketing Function

Delivering value to consumers in market exchanges is often considered the primary function of marketing in organizations. For example, Holbrook (1994, p. 22) notes that consumer value is the "fundamental basis for all marketing activity"; Srivastava, Shervani, and Fahey (1999, p. 172) observe that it is a "driving obsession" of organizations; and Sirdeshmukh, Singh, and Sabol (2002, p. 21) argue that value is the "superordinate goal" in market exchanges. Although our study recognizes the significance of creating and delivering market value, it draws from relationship marketing to suggest that a superordinate focus on value that subordinates other marketing functions is likely to be incomplete at best and myopic at worst. An important function of marketing is also to build, maintain, sustain, and grow the firm's relationships with external nodes, including consumers, intermediaries, and regulatory institutions. We used the notion of trust to capture the strength of market relationships and developed a framework around the premise that firms must simultaneously focus on trust and value to maintain healthy market relationships. Our model does not assume that exchange partners consider the pursuit of value inappropriate. We emphasize that without the

[5]Here, we recognize the role of technology in providing "new" products that help address the underlying trust–value dilemmas. The development of Swerve enables Coke to gain the trust of its noncommercial intermediaries while delivering and extracting value. Likewise, the "new" non-PFOS-based formulation of Scotchgard offers 3M a technology-based option to resolve its trust–value dilemmas. We thank the editor for this observation.

potential for value, a fundamental motivation for market exchanges would be lacking.

Our contribution does not rest on recognizing the need to pursue trust in addition to value in market relationships. Rather, our contribution stems from recognizing the potential for and the significance of conflict in the pursuit of trust and value goals. Specifically, our analyses show that a singular focus on value as a goal can undermine relational trust, and paradoxically this reduced level of trust can thwart the firm's efforts to extract value from market relationships. Coke's recent strenuous efforts to build partnerships with school districts that go beyond economic value considerations and repair the damage to its market relationships suggest that an important lesson has been learned.[6] The pursuit of value and trust in market relationships is governed by neither independent nor invariably noncompensating mechanisms. This insight yields a paradox in that a firm driven purely by economic value goals is likely to undermine its ability to create and deliver market value over time, if not risk its survival.

To theorize this paradoxical pursuit of trust and value goals, we believe that researchers and practitioners must develop models that explicitly consider the state of the trust–value balance in a given market relationship (i.e., What is the degree of imbalance?) and identify mechanisms and drivers that either increase or decrease the trust–value imbalance (i.e., How can this imbalance be managed?). Prior research has not viewed trust and value dynamics from the perspective of imbalance assessment and reduction. Often, these imbalances pose trust–value dilemmas that require trade-offs and impede a harmonious pursuit of both goals, at least in the short run.

Understanding the Nature, Scope, and Significance of Trust–Value Dilemmas

The simultaneous focus on trust and value goals in marketing presents possibilities for the study of trust–value dilemmas. A trust–value dilemma occurs when marketing decisions involve a trade-off between trust and value at a specific node or across nodes. Although marketing decisions do not always involve trust–value dilemmas, our case studies reveal that such dilemmas are probably quite common. The 3M case provides a compelling example of the nature, scope, and significance of such dilemmas. Confronted with mounting scientific evidence about the potential health hazards of PFOS, 3M needed to make a decision: Should it proactively withdraw Scotchgard and risk its value proposition for consumers and intermediaries, or should it continue to market its products while seeking unequivocal evidence of Scotchgard's link to health and environmental risks? Whereas the former strategy was likely to build trust with the EPA, it came at a potential value loss to 3M's consumers and intermediaries and to itself. The second strategy was equally problematic; it preserved the value to the market but possibly placed 3M's relationship with the EPA at risk of trust depletion. As we outlined in the case, this trust–value dilemma affected 3M's relationships at each node and had significant monetary consequences for 3M and its consumers and intermediaries. In choosing trust over value, 3M made a risky decision that ultimately paid off, because the EPA legitimized the company's actions and provided support in mitigating the impact of value loss through a yearlong phaseout period. The market apparently rewarded 3M for its enhanced trust.

In contrast, the Coke case presents a situation in which initial marketing decisions appeared to favor value over trust in a similar trust–value dilemma. Trying to preserve its free market rights to deliver value to the market, Coke opposed the efforts of noncommercial intermediaries to regulate the sale of soft drinks on school premises and made little effort to build trust. Because Coke did not simultaneously consider the trust and value dynamics and did not take a societal view of its value propositions, its actions remained focused exclusively on its present value contributions. Thus, Coke failed to appreciate the trust–value trade-offs that its relational partners were contemplating. Although Coke eventually acceded to the demands of noncommercial intermediaries, it did so only after the LAUSD board passed a regulation to authorize individual schools to constrain Coke's presence. The scope and significance of the trust depletion in this case stretched beyond the LAUSD. Following the LAUSD, two school districts in Colorado turned down exclusive contracts with Coke; Philadelphia rejected a contract worth $43 million; and several districts, including Madison, Wisc., allowed their contracts to expire. Over the past few years, more than 40 schools have successfully resisted exclusive pouring-rights contracts (Brownell and Horgen 2004). Moreover, competitors have taken advantage of the anti–soft drink movement and rushed in. Many organic and health food companies, such as Stonyfield Farms (makers of organic yogurts) and White Wave (makers of Silk soy milk), aggressively campaigned to place their own vending machines in schools (Byron 2003). The trust–value dilemmas in the Coke versus the LAUSD case have permanently altered the way soft drinks and food products are marketed on school premises.

There is growing evidence that such trust–value dilemmas are emergent in other situations and are worthy of attention. For example, in a recent study, Rindfleisch and Moorman (2003) examined the influence of cooperative alliances among competitors (trust) on the consumer orientation of a firm (value). Using a sample of 103 firms in 70 alliances, the study found that cooperative alliances among competitors that favored trust and relationship building resulted in decreasing consumer orientation or value over time. Moreover, when the alliances were not monitored by a regulatory agency, the rate of value loss increased significantly. Although Rindfleisch and Moorman (2003) do not explicitly posit the problem of consumer orientation and cooperative alliance as a trust–value dilemma, the results appear consistent with such a representation. Thus, we believe that trust–value dilemmas are relevant for the understanding of relational dynamics in the marketplace, and their nature, scope, and significance warrant further theoretical development and empirical examination.

To theorize such trust–value dilemmas, it would be useful to address how trust and value are weighted in decision making by relational partners, what factors cause these

[6]We hasten to add that the Coca-Cola Company is not unique in this situation. The LAUSD's efforts, like many others around the country, are directed at soft drinks in general, regardless of brand name. We have focused on Coke as part of our case study to examine in greater depth the specifics of a situation and uncover the underlying dynamics.

weights to shift over time, and how relational partners recognize and respond to differential weights in their trust and value judgments. Although it is tempting to conclude from the cases we describe herein that markets reward companies that weigh trust greater than value (e.g., 3M versus Coca-Cola), we view this neither as an empirical regularity nor as a theoretical necessity. It is possible to speculate about conditions in which market rewards favor delivery of greater value than greater trust. Contextual, situational, and temporal contingencies are likely to influence how different exchange partners weigh trust and value and the optimal weights that promote market effectiveness. Efforts toward theorizing these dynamic processes are likely to be fruitful.

Understanding Disparate Relationships as Interdependent Systems

The case studies reveal important interdependencies among a firm's market relationships involving consumers, intermediaries, and society that are often neglected or undertheorized. Because most studies tend to examine these relationships separately, disparate bodies of work have developed around each node (i.e., business-to-business, business-to-consumer, channels, and public policy). Focusing separately on each nodal relationship offers advantages of depth and detail; however, it comes at the cost of shifting attention away from mechanisms that interconnect the disparate nodes. Consider the study of a firm's societal relationships that involves the public, the environment, and regulatory institutions. In the marketing literature, these issues have been examined under the rubric of corporate social responsibility, or social impact management (Maignan and Ferrell 2004), a field that covers issues ranging from the nature of a firm's social obligations to how firms make socially responsible decisions and what managerial processes support sensitivity to societal issues. To a certain extent, the marketing literature has addressed these issues by focusing on whether and how a firm's corporate social responsibility/social impact management affects consumer loyalty. For example, considerable work has focused on the degree to which socially responsible behavior influences consumers' evaluations of firms and the products they offer (Brown and Dacin 1997; Handelman and Arnold 1999; Osterhus 1997). Likewise, other researchers have studied how enhancing the firm's legitimacy and credibility as a good citizen with different stakeholders (e.g., employees, public interest groups, community residents, investors) can protect its long-term success (Drumwright 1996; Maignan and Ferrell 2001; Murray and Montanari 1986; Petkus and Woodruff 1992). However, this work has produced mixed empirical findings.

Our case studies shed light on this debate and suggest that it is profoundly problematic to focus on either a single dimension of market relationships, be it trust or value, or a single relational partner node, be it consumers, intermediaries, or society. Instead, our analyses suggest that the interconnections among relational nodes and dimensions are essential to understanding why a firm's societal relationships matter in its ability to effectively deliver and extract market value. Consider the Coke case study. At a superficial level, noncommercial intermediaries, including parents and school administration, appeared less central to Coke, because it had the strong loyalty of its end consumers. At a deeper level, noncommercial intermediaries could not have been emboldened without the supporting reports from regulatory and institutional agencies, including the WHO and the USDA, among others. Collectively, these reports and the active involvement of noncommercial intermediaries created a spotlight on obesity in children and its health consequences and an awareness of the role of high-sucrose products in promoting this condition. Coke's initial attempts to deflect this scrutiny and counterattack the claims of regulatory agencies only legitimized the activist stance of noncommercial intermediaries. Subsequently, Coke opted to work cooperatively and respond to the concerns of noncommercial intermediaries, a decision that in and of itself would have been sufficient to diffuse the situation and enable Coke to rebuild trust with its noncommercial intermediaries. However, because Coke's own commercial intermediaries resisted its efforts, Coke needed to reevaluate its pricing and profit-sharing arrangements. This reevaluation provoked a trend that marks a major shift in the marketing of products on school premises. Viewed in the context of other interacting market relationships, this is likely to shift path dependencies in product development, distribution arrangements, and contracts and to set new boundaries for marketing efforts directed at school-going children. We argue that the preceding insights cannot be secured without a simultaneous analysis of a firm's diverse relationships and their interconnectedness. Current approaches are likely to marginalize such insights.

This focus on interconnections is consistent with Wilkie and Moore's (1999, p. 217) suggestion that to examine marketing's contributions to society, an aggregate marketing system perspective must be adopted, a system that they claim has "largely disappeared from the marketing mainstream in the recent years" but holds significant promise to offer insights into the complexity and dynamics of marketing activities. A unique aspect of the aggregate marketing system is that it considers multiple marketing activities (e.g., distribution, advertising), the flows that connect them, and the interactions that promote or inhibit market dynamics. The study of interconnectedness requires a similar system perspective. In extending this perspective, it is appropriate to consider the relative importance a firm places or should place on the different nodes of its market relationships. Indeed, a firm that espouses social responsibility as an important corporate mission is expected to place relatively greater emphasis on its relationships with noncommercial intermediaries and market-regulating agencies. For the cases we selected herein, such firm–societal relationships appear to hold significant sway in market evolution and development. However, it would be inappropriate and incomplete to conclude from our case studies that key questions rely on the identification of the relative importance of a firm's nodal relationships. Rather, our contribution stems from the insight that a firm's societal relationships can either enhance or impede its relationships with its consumers, intermediaries, and/or regulators, and vice versa. Thus, Coke's relationships with its commercial intermediaries impeded its ability to respond effectively to its noncommercial intermediaries, just as 3M's relationships with

its regulatory agencies enhanced its ability to manage the trust–value balance with its intermediaries and consumers.

To facilitate theorizing of such interdependencies, we provide a framework that embeds a firm's societal relationships within its other ongoing market relationships. This embedded view shifts attention away from a main effects analysis and demands focus on its interaction effects. Small missteps can escalate by the multiplier effect of interacting relationships, as is evident in the Coke case, just as proactive response can be amplified by interconnected nodes to build trust despite its potential for market risk, as in the 3M case. The notion of managing the trust–value dilemmas is at the core of these interacting relationships. We do not suggest that obtaining or maintaining high levels of both trust and value between a firm and its exchange partners is a simple matter, and we do not claim that it is necessary for a firm to have high levels of trust and value at each relational node to survive in the market. Rather, our point is that it is often necessary to assess the degree of trust and value regularly at each relational node because dynamic market systems shift the trust–value equation unpredictably. In many examples, such as the case studies we develop herein, firms face nontrivial choices either to maintain trust but likely forsake value or, equally vexing, to enhance value but potentially undermine trust. How a firm navigates such dilemmas is likely to influence the health of the focal market relationships. Often, it might also spill over to influence its relationships at other market nodes. However, we hasten to add that imbalanced trust and value contributions do not necessarily suggest unhealthy market relationships. Exchange relationships may flourish and grow when exchange partners have a high level of mutual trust, but the firm's products and/or services may not deliver similarly high or optimal levels of value. Similarly, market relationships may remain viable for a firm that delivers a high level of value but has practices and procedures that do not yet engender a similarly high or optimal level of trust. Such imbalanced trust–value market relationships may be sustainable at least in the short term by the expectations of exchange partners that things will get better and the imbalance will diminish as the relationship develops. Sustainability is questionable if the trust–value balance deteriorates and things do not improve. Moreover, it is useful for firms to be vigilant of market conditions that make it challenging to maintain high levels of trust and value with multiple exchange partners whose interests may conflict.

Finally, we recognize that case studies can at best serve as a starting point for a research program and cannot be overinterpreted (Yin 2002). In this regard, the patterns and inferences we suggest should be viewed as tentative. Nevertheless, our case studies affirm the contribution of grounded fieldwork to theory development at this nascent stage of the research program. We encourage researchers to develop additional case studies to illuminate these underlying dynamics, build confidence in investing resources for additional theoretical work, and confirm directions for future theorizing that are likely to be fruitful. Collectively, these efforts can help chart the pathways for understanding the complexities and interconnectedness of the emerging marketplace. For firms, such understanding holds the promise for coping effectively with disparate market relationships and avoiding costly mistakes. For policy and noncommercial intermediaries, this study may provide clues for enhancing their impact and substantiating the important role they play in the marketplace. Together, firms and regulatory and intermediary agents can work cooperatively to satisfy consumer needs and enhance societal well-being.

Appendix A. 3M's Scotchgard: A Chronology of Events

Date	Description of Event	Source
1948	3M begins manufacture of perfluorooctanyl sulfonate chemistry.	3M 1999a
1954	During experiments with the chemistry, Scotchgard is invented.	Koontz 2001
1956	Scotchgard is first put on the market.	*Business Wire 2001*
1960	The first death resulting from deliberate inhalation of Scotchgard is reported.	Gibson 1985
1968	A physician finds an unusual form of organic fluorine in human blood.	3M 1999a
1976	Congress passes the Toxic Substances Control Act, giving the EPA the ability to track and require the reporting and testing of industrial chemicals.	U.S. Environmental Protection Agency 2004
1976–1980s	3M begins medical monitoring of organic fluorine in exposed workers in 1976; testing is expanded in 1980 with the development of a quicker test. No adverse health effects are found.	3M 1999a
1978–1979	In a study of fluorochemicals in fish, researchers find accumulation in certain systems and organs but no signs of toxicity	Gagnon 1979; Welter 1978

Appendix A. Continued

Date	Description of Event	Source
1983	In a study on the effect of high doses of fluorochemicals on rats, 3M researchers conclude that only female rats may have had higher-than-expected tumor incidence, but overall the researcher did not consider the chemical to be carcinogenic under the design and conditions of the study.	Sibinski 1983
1984	A study of organic fluorine levels in 3M workers' blood indicates that a previous pattern of decline has been reversed; many show increases, prompting the physician making the report to note this trend with "serious concern."	Roach 1984
1984	3M notifies the EPA of seven deaths from "intentional abuse" of the Scotchgard spray; 3M adds a warning of the dangers of deliberate inhalation to the product label.	Gibson 1985
1985	*The Wall Street Journal* reports that federally recommended tests by 3M showed that extensive exposure to Scotchgard would kill small animals.	Gibson 1985
1993–1996	Independent researchers report no increased health problems as a result of worker exposure to PFOS.	Weber 2000
1993	3M reformulates Scotchgard so that it is water based and therefore is no longer of interest to intentional abusers.	Van Buren 2000
1993	An independent review of 1978–1979 3M bioaccumulation studies states that because of study design and other analytical problems, conclusions from previous work are questionable.	Gillett 1993
1997	Detection limits for PFOS achieve much greater sensitivity, being lowered for the first time to 50 parts per billion.	3M 1999a
1997	Researchers testing new detection techniques find PFOS in the blood of random blood banks.	Weber 2000
1997	A published study, which includes an author from 3M, notes that organofluorine compounds are "ubiquitous environmental contaminants" (p. 2445) that require much additional research, though production and usage rates of the compounds are usually considered proprietary.	Key, Howell, and Criddle 1997
1997	3M begins reducing manufacturing releases of perfluorooctanyl chemistries (in waste water discharges and air emissions).	Battelle Memorial Institute 2000; Weppner 2000b
May 1998	3M reportedly begins planning to abandon the chemistry.	Weber 2000
July 24, 1998	3M's profit drops approximately 8%; the company cuts at least 3500 jobs.	*The Financial Post* 1998
September 7, 1998	3M introduces a new brandmark and logo to strengthen the Scotchgard brand along with other marketing actions to increase product visibility.	Herlihy 1998
September 1998	A study shows that PFOS caused postnatal deaths as well as other developmental effects in a two-generation study of rats.	Auer 2000; Weber 2000
November 1998	Asked to evaluate an earlier study (1983), a pathologist disagrees with its conclusions and asserts that the fluorochemical should be considered a liver carcinogen.	Bruner 1998
December 14, 1998	3M's initial meeting with the EPA on the effects of PFOS is held.	3M 2000a
January 1999	A report by 3M Medical Department scientists and physicians summarizes data on the biological effects of PFOS and explains extensive future study plans. The report states that no adverse health effects in humans from PFOS exposure have been found to date, but when rats and monkeys have been exposed to high doses, serious effects have resulted.	3M 1999a

Appendix A. Continued

Date	Description of Event	Source
May 1999	A "confidential source" commissions the Battelle Institute to study the perfluorooctanesulfonyl fluoride chemistry's environmental dispersion and bioaccumulation in the human food chain.	Nishioka and Gunster 1999
May 1999	3M submits a report to the EPA that summarizes the use, distribution, and environmental release of sulfonyl-based fluorochemicals. The report sets priorities for reformulation of the product and notes communication with customers and other product stewardship activities. The report notes that 3M has been discussing with the FDA a petition to use an FDA-regulated fluorochemical in microwave popcorn applications. It also notes 3M's extensive programs to reengineer products to reduce PFOS and research the risk of these chemicals.	3M 1999b
August 2, 1999	3M introduces a new $5 million print advertising campaign for Scotchgard, the first in 11 years.	Sampey 1999
March 2000	3M provides a consolidated statement of its efforts to assess the dispersion of PFOS in the environment and its plan for comprehensive assessment of environmental exposure. The company also acknowledges that studies conducted in the late 1970s (see the previously mentioned studies) produced data and conclusions that are "highly questionable and may be misleading" (p. 27).	3M 2000b
February 2000	3M officials hear data on the widespread presence of PFOS in wildlife. This study was subsequently published (see the entry for Geisy and Kurunthachalam 2001).	Weber 2000
March 2000	In a presentation to the EPA, 3M discusses both its fluorochemical reengineering initiative to reduce manufacturing residuals by more than 90% and its fluorochemical reinvention initiative to identify new product chemistries.	3M 2000a
April 2000	A 3M-sponsored independent study to determine what level of exposure to PFOS would result in no observable health effect in monkeys shows that deaths appear to be related to high levels of PFOS ingestion.	Thomford 2000
April 2000	A study, which is part of a new 3M life-cycle management initiative, summarizes the estimated waste streams of PFOS products based on 1997 sales in the United States.	Battelle Memorial Institute 2000
May 2000	3M researchers confirm the presence of fluorochemicals in tissue samples from a wide range of species throughout the world.	Hansen 2000
May 16, 2000	3M announces its decision to phase out the manufacture of products based on its perfluorooctanyl chemistry as part of the company's strategy to practice responsible environmental management.	3M News 2000
May 16, 2000	The EPA announces 3M's phaseout of the chemistry and its own action plan regarding the future of PFOS. This internal memo summarizes reasons for the action.	Auer 2000
May 17, 2000	*The New York Times* reports that 3M is phasing out Scotchgard and focusing instead on creating new lines of products.	Barboza 2000b
May 19, 2000	*The New York Times* reports that the EPA claims it played a major role in forcing the withdrawal of Scotchgard products by 3M.	Barboza 2000a
May 23, 2000	The American Council on Science and Health, a public interest group, derides 3M's decision to withdraw products that have no proven adverse effect on human beings.	Whelan 2000
July 7, 2000	3M presents its phaseout plan for the Scotchgard-related products and acknowledges that the EPA and 3M have begun dialogue on substitute chemistries.	Weppner 2000b
July 13, 2000	3M reports a study to the EPA that shows that the actual half-life of PFOS appears to be fourfold lower than what was previously thought.	Zobel 2000

Appendix A. Continued

Date	Description of Event	Source
August 2000	An EPA memorandum summarizes the results of studies on the distribution and toxicity of PFOS; the author notes the need for additional research because of the limitations of the studies.	Seed 2000
October 24, 2000	3M takes a $106 million charge against its third-quarter earnings as a result of the withdrawal of Scotchgard; sales in 3M's specialty materials are down 2% for the same reason.	Padley 2000
October 2000	A proposed EPA "significant new use rule" (SNUR) would require manufacturers and importers to notify the EPA at least 90 days before commencing the manufacture or import of PFOS-based substances for significant new uses; the EPA requests comments on the proposed rule.	*Federal Register* 2000
November 20, 2000	3M announces that Scotchgard is not going away and begins a consumer/trade ad campaign for new Scotchgard formulations; carpet protection is to be phased into mills over the next six months.	Herlihy 2000
December 2000	3M comments on the proposed EPA SNUR, detailing the history of and clarifying issues related to research on and the phase out of PFOS; 3M states that it does not believe that the SNUR is necessary to ensure a successful phaseout of the chemistry.	Weppner 2000a
January 2001	The EPA presents information to the Department of Defense Fire and Emergency Services on the potential impact of its regulatory activity regarding PFOS on the Department of Defense's military construction and firefighting operations.	Dominiak 2001
2001	Independent research finds PFOS in tissue of wildlife worldwide.	Geisy and Kurunthachalam 2001
August 2001	3M rolls out reformulated Scotchgard stain repellants for consumers and a new industrial product for carpet manufacturers, and it announces a partnership with Bissell carpet-cleaning machines. 3M begins ad campaign.	Black 2001
December 2001	Scotchgard is rated for quality in the top 4% of 1000 major brands among U.S. women ages 25–54.	*Coatings World* 2002b
April 10, 2002	This is the effective date of the new EPA rule regarding manufacture and import of chemicals derived from perfluorooctanesulfonic acid; the EPA also requests comments on a supplemental proposed rule regarding additional affected chemicals.	*Federal Register* 2002
July 2002	3M comments on the EPA's supplemental SNUR proposal, noting that further studies provide extensive data that confirm no adverse effects of existing PFOS levels on the environment or general population.	Santoro 2002
July 22–August 2002	3M announces new Scotchgard leather protection products, a Scotchgard ingredient for paint, and Scotchgard window and glass protection.	*Business Wire* 2002; *Coatings World* 2002; *FN* 2002
December 2002	The EPA announces that its final SNUR on PFOS and related substances is effective January 8, 2003.	*Federal Register* 2002

Notes: For a list of references that correspond to the citations in this Appendix, go to http://wsomfaculty.cwru.edu/singhj/.

Appendix B. The Coca-Cola Company Versus the LAUSD: A Chronology of Events

Date	Description of Event	Source
January 1, 1986	The federal government bans public schools from making foods of minimum nutritional value (including carbonated beverages) available in food service areas during meal times. Regulation of sodas in other contexts (i.e., vending machines) is left up to the state and school districts.	USDA 1986
June 17, 1995	The Consumer Union releases a report on commercial pressure on children at school.	Consumer Union 1995
June 20, 1995	A USDA school food purchase study concludes that soft drinks are replacing school lunches for young children.	Daft, Arcos, and Hallawell 1998
April 1, 1998	California State Senator Martha Escutia collapses after an insulin shock. This initiates research on the causes of obesity. Senator Escutia begins work on Senate Bill 19, a bill that limits sale of carbonated drinks on school premises.	Tresniowski and Sheff-Cahan 2002
October 21, 1998	"Liquid Candy" report cites negative effects of soft drink consumption and statistics on gender-specific consumption in various age groups. A rise in obesity parallels a rise in soft drink consumption.	Jacobson 1998
Spring 1999	A study of children in low-income schools in the LAUSD shows that 40% of the 900 students in those schools are obese. Obesity is particularly acute in African American and Latino children, who are more likely to be uninsured.	Slusser 2001
June 2000	Physically active teenage girls who are soda drinkers are five times more likely to break bones than are non-soda-drinking teammates.	Wyshak 2000
2000	A survey conducted by the California Department of Health Services reveals that one of three California teens are at risk for becoming obese. The main contributing factor in this age bracket is the consumption of empty calories.	California Center for Civic Participation and Youth Development 2000
2000	LAUSD Board Member Valerie Fields introduces a motion that calls for the analysis of food served in the LAUSD and the development of an overall health policy. An informal network of parent and community activists establishes the Healthy School Food Coalition to identify necessary changes in school policy and to address the increased presence of junk food and sodas on school campuses.	Rosa et al. 2002
1999–2000	In cooperation with health food advocates and experts on food nutrition brought together by the California Center for Public Health Advocacy, Senator Martha Escutia begins to formulate recommendations for limits on sweetened foods.	Rosa et al. 2002
2001	A longitudinal study establishes a link between soft drink consumption and obesity.	Ludwig, Peterson, and Gortmaker 2001
March 1, 2001	Coca-Cola announces its withdrawal from schools and the formation of the Education Advisory Council, which will set guidelines for best practices in public and private partnerships. Coke also promises several initiatives to help support education while downplaying the commercial advertising aspect of its partnerships, including providing students with healthier beverage options in machines, placing noncommercial signs on the machines, and promoting fitness. Note that Coke continues to be sold in schools because its bottlers do not support the withdrawal.	Kaufmann 2001
May 22, 2001	In response to concerns about food issues in the LAUSD raised by parents, teachers, and community members, the board passes a revised motion that instructs the superintendent to investigate food and beverages that are served in LAUSD schools and to develop the Healthy School Food Policy.	Rosa et al. 2002
June 1, 2001	The superintendent of the LAUSD informs the board that a Child Nutrition Advisory Group would be formed and that a technical consultant would be hired to provide an analysis of nutritional content, location, and times of the food served at LAUSD campuses.	Rosa et al. 2002

Appendix B. Continued

Date	Description of Event	Source
September 24, 2001	Coca-Cola hires public relations firm Holland & Knight to ward off federal restrictions on vending machines. Senator Patrick Leahy (Vt.) introduces a bill that prohibits schools participating in the national school lunch program from selling soda and candy.	O'Dwyer Company 2001
October 14, 2001	Governor Gray Davis signs Senate Bill 19 into law. The bill regulates the sale of unhealthy food and beverage items in all public schools, eliminates junk food in elementary schools, increases state reimbursements to school districts for meals, and provides grants for nutrition and exercise programs. The bill is eventually amended to apply mainly to elementary schools, effective January 2004.	Rosa et al. 2002
December 12, 2001	California's Oakland Unified School District adopts a policy that vending machines do not disperse sodas (caffeinated and high-sugar beverages) during school hours.	Oakland Unified School District Nutrition Policy 2001
February 20, 2002	Senator Deborah Ortiz (D–Sacramento) introduces the Soda Tax Bill (SB1520).	Legislative Counsel of State of California (Anonymous 2000)
May 21, 2002	Because of heavy lobbying by the junk food and soda industry, the Soda Tax Bill (SB1520) fails passage by the Revenue and Taxation Committee. No further action is taken.	Legislative Counsel of State of California (Anonymous 2000)
June 11, 2002	LAUSD Board Members Genethia Haynes and Marlene Canter introduce a preliminary motion to ban the sale of soft drinks at all school sites. Key people on the board, as well as advocate groups, parents, and community activists, form the Soda Resolution Coalition.	Rosa et al. 2002
July 2, 2002	A draft report by the LAUSD technical consultant indicates that items sold in vending machines and through a la carte sales are high in sugar, caffeine, and salt content. The consultant's report recommends that such foods no longer be made available to the students.	Rosa et al. 2002
August 15, 2002	Ten members of the Soda Resolution Coalition deliver each board member a full-sized mason jar of sugar, representing the amount a teenager consumes in a week by drinking two sodas a day. The campaign becomes more visible to the public, and there is more media attention.	Rosa et al. 2002
August 25, 2002	The media reports on obesity trends among Los Angeles teens and the upcoming LAUSD board vote.	Dimassa and Hayasaki 2002
August 26, 2002	The media reports on exclusive contracts between public schools and soda companies.	Canter and Hudley-Hayes 2002
August 26, 2002	Coca-Cola Enterprises threatens to end its sponsorship of the LAUSD's Academic Decathlon (a loss of $20,000 in activity fundings for the district). School administrators express mixed feelings about the ban. High school students claim that for the district they are old enough to decide what they want to drink and that they resent adults' trying to run their lives. A report released by the Los Angeles County Task Force on Children and Youth Physical Fitness finds that schools have outdated fitness facilities, that local public schools do not emphasize fitness, that elementary schools do not offer any structured physical education classes, and that high school students are only required to take physical education for two years.	Gao 2002
August 27, 2002	The LAUSD board votes unanimously to ban the sale of soft drinks on its middle and high school campuses (677 schools, 748,000 students), effective January 2004. Vending machines are to offer only water, milk, and beverages with 50% juice and no added sweeteners. Effective immediately, schools must stop signing new contracts and extending existing agreements with companies that sell soft drinks.	Rosa et al. 2002

Appendix B. Continued

Date	Description of Event	Source
August 28, 2002	Greg Vallone (principal at a LAUSD high school) claims that his school's current three-year contract with Coca-Cola is worth $50,000 plus a percentage of sales. Classic Coke alone is worth $25,000 to his budget. He is not worried about financial implications, but he wants Coke to offer healthy options rather than terminate the relationship.	Montagne 2002
August 29, 2002	In reaction to the LAUSD vote, shares of Coca-Cola fall by 2.36% and shares of Pepsi fall by 3.32%.	Ayres 2002
November 22, 2002	Venice High School raises thousands of dollars by holding a celebrity basketball game to demonstrate that school funds can be raised through healthy alternatives.	Domac 2002
January 16, 2003	Senators Torlakson, Escutia, and Ortiz introduce Senate Bill 65. This bill requires that parents be notified when governing boards grant the right for sales of carbonated beverages throughout the district to a person, company, or corporation.	Torlakson and Ortiz 2003a
January 22, 2003	Senators Torlakson, Escutia, and Ortiz introduce Senate Bill 74. This bill mandates that all vending machines on state property offer beverages that at least meet 50% of acceptable nutritional guidelines.	Torlakson and Ortiz 2003b
February 21, 2003	Senator Ortiz introduces Senate Bill 678. This bill requires beverage contracts to be reviewed or cancelled, effective January 1, 2004. Vending machines on campuses must have as many "healthy beverage" as "unhealthy beverage" dispensers.	Ortiz 2003a
February 21, 2003	Senator Ortiz introduces Senate Bill 677. This bill prohibits the sale of carbonated beverages on elementary, middle, and high school campuses, effective January 1, 2004, January1, 2005, and January 1, 2007, respectively.	Ortiz 2003b
April 23, 2003	The WHO invites key players in the food industry to a meeting to discuss how to create an environment for consumers in which healthy choice is the easy choice to make, and they encourage the private sector to work proactively with the WHO in addressing the global obesity problem.	WHO 2003
October 15, 2003	Some schools allow vending machines to be stocked with soy chips, rice snack bars, and low-fat organic yogurt. Price plays a central role in the success of these healthy products.	Byron 2003
November 17, 2003	Coke, in collaboration with its bottlers, announces its withdrawal from schools. Coke faces the challenge of promoting and selling its products to children while remaining in the good graces of parents. Coke plans to introduce Swerve, a milk-based drink that it would sell only in schools. It agrees to let the schools choose the type of Coke products sold in vending machines.	Devine 2003
December 5, 2003	Coke is in the process of negotiating changes in its pricing policy with CCE, its biggest bottler. The changes are geared toward restructuring its relationship with the bottler and rekindling overall growth.	Terhune 2003
January 5, 2004	In a new policy statement, the American Academy of Pediatrics claims that soft drinks should be eliminated in all elementary schools to help tackle the United States' obesity epidemic.	American Academy of Pediatrics Committee on School Health 2004
January 16, 2004	The Philadelphia school district officials ban the sale of soft drinks throughout the public school system, which has approximately 214,000 students.	*The New York Times* 2004

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