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Book Reviews

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An Autobiographical Essay: When I Stop Learning, I Will Leave

Writing an autobiographical essay is both welcome and daunting. In putting these thoughts to paper, I reflect on the path taken and speculate on where it might yet lead me. I suspect that my experience is unique, and I am not sure that my experience will be for everyone to follow. Nevertheless, my hope is that in describing what worked for me, others may be stimulated in some way to find what works for them. As I reflect back on my career, I have no regrets and am happy with how it progressed—it has certainly been interesting, challenging, and rewarding.

In reflecting on artist Christo's sculpture "wrapping" of the Pont Neuf Bridge in Paris, the director of the De Cordova Art Museum in Lincoln, Mass., stated that Christo's work was an "art event" and not a real "sculpture" because it was only up for a few weeks. I met Christo shortly afterwards and asked him about this comment. He reaction was "nonsense," the work was "real sculpture," and the only reason it was up for such a short time was that the insurance for the installation cost him $200,000 a week. This indicates either that artists do not understand their own work or that their critics do not understand it. As a scholar, I may not be able to judge my own work. In this essay, I describe how I view my research. In doing so, I assume that I understand my own work. I hope I am not too close to it to miss the truth.

I begin by sketching out the area of my primary research—new product development. In doing this, I necessarily and incidentally touch on many of the events that influenced my development and career choices and the attributes of the research style that, in my view, have been critical to the success of my work. I close with a description of my current research plans.

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Precipitating Events

I grew up in Wisconsin—the son of a man who believed that "work is a virtue." Working in Dad's business (Urban Steel Buildings) during the summers had a lasting effect on me. Working with the construction crew was hard, and the hours were long. Dad also let me try my hand in the office as a draftsman, cost estimator, and salesman. It was here that I had my first exposure to real marketing. Among other things, I learned how to sell by providing customer solutions (e.g., a roof guaranteed for 20 years against leaks) and by demonstration (e.g., a special pull rivet that forced aluminum roofing panels tightly together all the time). The product needed to reflect superior engineering and have a benefit for the consumer. We positioned our buildings as the highest quality product but also segmented the market with a "value-priced" line of steel buildings to counter low-cost competition. My intention was to go into Dad's business. I believed that engineering and marketing were the critical skills I needed, so I went to University of Wisconsin for a bachelor's degree in mechanical engineering and an MBA in marketing. I graduated in 1964. But the best laid plans sometimes do not work out.

In that same year, I enrolled in the marketing Ph.D. program at Northwestern. Phil Kotler was my advisor. After a year of core work, I needed to begin thinking about a thesis, and Phil got me involved with new product forecasting at Union Carbide Corporation. I began modeling the interaction effects of a new product on existing products and applied a simulation model to a new polyvinyl fluoride product Union Carbide was introducing. Thanks to Phil and a Union Carbide product manager, things fell into place, so that in the second year, I had a draft of my thesis. My wife and I typed it up (on mimeograph masters) and delivered it to the committee before strapping the skis on the car and heading for Aspen, Colo. On returning, we expected to spend another year on the thesis. (One committee member had asked me, "Are you going to turn your thesis in like this?" Fortunately, he was talking about the format of the tables, not the content.) But the thesis was accepted with minor revisions, and we began a quick and late job search.

Fortunately for us, Massachusetts Institute of Technology (MIT) was also late in hiring in 1966, and I was able to convince the hiring committee that there was a good fit between my management science and marketing interests and the MIT philosophy. I was warned by faculty that though MIT was not an easy place to earn tenure, "it was a good place to be from." My response has been my touch-

stone ever since: "Fine, *when I stop learning, I will leave*. Perhaps they will ask me to leave before that happens, but it is worth a try." Given the MIT opportunity, I did not go into Dad's business. Dad always said he overeducated me by funding me through graduate school. In any case, I never did stop learning, and MIT did not ask me to leave, so here I am still. After 36 years, I must say that MIT has been a wonderful environment for my entrepreneurial style of research.

My Research

The past 35 years have been an exciting time for marketing science and for modeling new product decision support. The challenges of new product design, forecasting, risk management, and launch strategy have fostered a large set of creative and useful models. No need to summarize this literature here, but interested readers will find *Design and Marketing of New Products* (Urban and Hauser 1993) and other summaries (e.g., Green, Krieger, and Wind 2001; Ulrich and Eppinger 1995) useful.

My new product research proper began at the University of Wisconsin with my MBA thesis "Product Planning in the Aerospace Industry," in which I described the new product processes and generalized a multistage decision sequence for the industry (see Urban 1964). I was fortunate enough to work directly with General Motors' (GM's) and 3M's aerospace divisions. My doctoral thesis at Northwestern on industrial product life cycle forecasting was a modeling effort aimed at understanding interdependencies between new and existing products (see Urban 1966). Drawing on Monte Carlo simulation and chance-constrained programming techniques, I modeled the product line substitution and complementary effects Union Carbide faced in launching and pricing a new chemical product (Urban 1968). This thesis, along with a coauthored textbook that gave a state-of-the-art view of management science in marketing in the late 1960s (Montgomery and Urban 1969) set the stage for my 35 years of research.

After arriving at MIT, my initial research focused on the launch and test market phases but then began migrating to earlier stages, including premarket testing and design and opportunity identification. This development prompted my friend and colleague, Al Silk (Professor at MIT and subsequently Harvard Business School), to quip, "Urban's research has been going backwards for many years." Although this is true, I retain a research interest in all phases of the development process. Figure 1 positions my research efforts in the new product development decision process. Here, I give a stream-of-consciousness description of my efforts and then identify the critical issues in my approach to research.

Test Marketing

In the late 1960s, major new theoretical approaches were being developed in the field of stochastic models. Growing out of a contact with a summer session student from the Noxell Corporation (which sells Noxema and Cover Girl skin care products), I learned that forecasting national sales levels based on test market results, planning the best marketing mix for launch, and tracking test market and launch

FIGURE 1
New Product Process, Selected Works
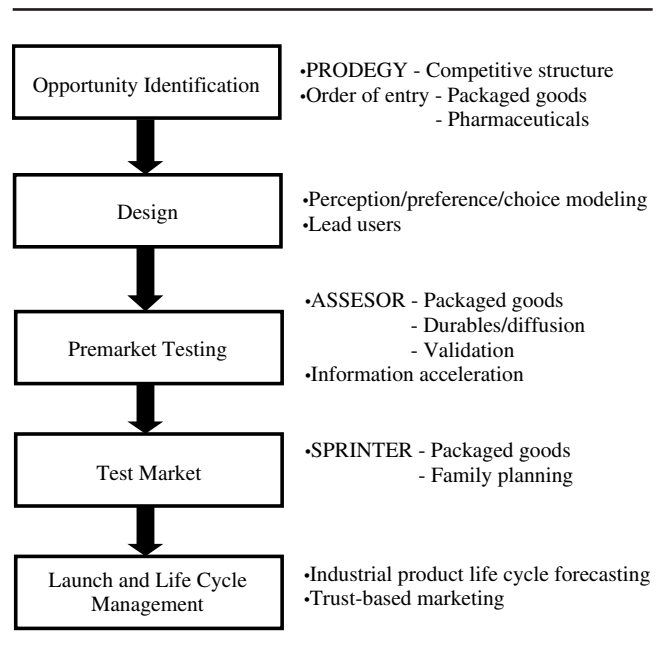
for diagnosis and control were important problems that were not being adequately addressed. This led to a sponsored research project at MIT and the development of a macro flow model methodology that combined elements of stochastic models, response functions, and empirical data in a managerial tool called "SPRINTER" for managing the new product test market and launch (Urban 1970). I was interested in discovering whether this model would really help managers, so I joined John Little and Len Lodish in a firm called Management Decision Systems Inc. Applications at Noxell and Nabisco helped refine the SPRINTER model and provided great case material for my articles and teaching.

During 1970, I spent a term visiting the Indian Institute of Management in Calcutta and became interested in the management of family planning. After returning to the United States, I began working with the Atlanta Area Family Planning Program and the Centers for Disease Control in an effort to improve the efficiency and effectiveness of their programs. My approach was to elaborate and extend the SPRINTER model and apply it to the trial and adoption of family planning (Urban 1974a). At that time, I had two master's students (Ron O'Connor and Joel Lamstein) who were interested in implementing new management techniques in the public arena, so we formed a nonprofit firm called Management Science for Health. Although I am no longer involved with the company (or its spin-off, John Snow Inc.), it is gratifying to report that they now employ more than 600 people working to improve public health management worldwide.

Premarket Testing

In 1972, Cal Hodock, then market research director at Gillette, called me with an invitation to join him for lunch at

Loch Ober, a premier restaurant in Boston. I was somewhat surprised because usually I bought lunch for him, in hopes of garnering MIT-sponsored research funds from Gillette. During lunch, he told me Gillette was looking for a modeling and measurement system to forecast sales of a new product in test market, based on the pretest market availability of the product, packaging, and advertising. He wanted the research to cost (on an ongoing basis) less than $25,000 and the forecast to be delivered three months after the project started. On the basis of the complexities I had seen in test market tracking and forecasting, I told him it was impossible. He was persistent. In the end, he persuaded Al Silk and me to look at his problem by dangling $40,000 for sponsored research funds at MIT. How could we refuse? Gillette's need, combined with the emerging logit modeling technology at MIT (McFadden 1970), led us to develop a convergent premarket forecasting approach based on measured changes by two independent models: (1) preference change and (2) laboratory-simulated trial and repeat purchasing. The result was the ASSESSOR model for forecasting the sales of new packaged goods (Silk and Urban 1978), and over time its validation was based on Management Decision Systems applications (Urban and Katz 1983).

In parallel with the validation work on consumer packaged goods, I was pursuing the application of pretest market forecasting to consumer durables. This grew out of discussions with a student of mine (John Dables) who worked at the Buick division of GM. He told me that the risks involved in developing a new automobile product were much greater than those involved with developing a packaged goods new product, because the investment was so much larger. The whole picture was further complicated by the lack of test marketing for automobiles. The thought occurred to me, why not apply the ASSESSOR methodology to consumer durables? Our discussion led to a five-year Buick-sponsored research project at MIT, which resulted in a durables ASSESSOR model and applications to premarket automobile forecasting based on an early production line version of the new automobile (Roberts and Urban 1988; Urban, Hauser, and Roberts 1990; Urban, Hulland, and Weinberg 1993). Good forecasting results were achieved, but top managers at GM argued that though our analysis could improve the launch, the forecast came too late in the process, because once the car existed in initial production line versions, the launch commitment was virtually assured. The costs were sunk, and on a marginal basis it was almost always profitable to go forward. This was forcefully brought home to me when we predicted in 1986 that the new downsized Buick Riviera sales would be half of the old level rather than the hoped-for doubling of sales. Buick introduced the car anyway. Although we were glad to have the opportunity for validation (sales dropped to .4 of the old level), we were indeed too late in the process to stop the program.

In the late 1980s, Hyper Card was developed at Apple, and MIT's Media Lab had invented the basic elements of surrogate travel. In 1990, we began an effort to use interactive multimedia to create a virtual automobile market of the future, before the new car was built. We put the customer in the future environment with full information and ability to control the search, and we measured responses to predict future sales before the production commitment was made. I called this "information acceleration" (IA). The first application was to electric vehicles at GM (Urban, Weinberg, and Hauser 1996), and on the basis of application and validation experience (Urban et al. 1997), the potential of this model and measurement methodology was encouraging. Initial field testing of the GM EV-1 two-seat sports car was done at MIT with the IA model. The final forecasting was done during 1992–93 through a consulting firm called Marketing Insight Technology Inc., which I started with a few of my students to implement IA concepts. The forecasts, based on expanded proprietary surveys, were for low sales in the 1998–2000 period (fewer than 1000 units per year) and indicated that the real demand was for an economy car with a hybrid power system for reliability (an electric motor plus a small gas-powered generator). General Motors did not go into production with this vehicle but rather custom built units for sale in California and selected other locations. In 1999, the sales of the EV by GM were about 700 units, surprisingly close to the forecast, given the vagaries of this market. I was given permission to publish these results, so the results considerably strengthened the MIT initial research for publication. In 1999, I was at an American Marketing Association conference in San Diego and saw the Toyota Prius (a four-door hybrid electric vehicle) in the hallway and a sign announcing a presentation of the Prius development story. I was pleased to see that the Toyota product manager had used the IA, on the basis of my publications only, to forecast the sales of the Prius hybrid economy car and had found a real market opportunity.

Design

As the seminal work on perceptual mapping was appearing in the 1970s, there seemed to be a natural fit to new product design. The notion of a "core benefit proposition" could be represented in the positioning and in a model called PERCEPTOR. I made an early attempt to link positioning to new product sales potential and extended this model for marketing of the MIT health maintenance organization (Hauser and Urban 1977; Urban 1975). I continued research on product design in an effort to integrate Von Hippel's lead user notions with market research methods (Urban and Von Hippel 1988) and apply it to industrial product (i.e., CAD/CAM systems for electronic printed circuit boards at Computer Graphics Inc.) innovation and diffusion from lead users to other customers. This theme has carried through to current research, in which I am putting lead users on an Internet design pallet to configure their ideal pickup trucks.

Opportunity Identification

Through the 1980s, I became convinced that marketers needed not only tools to help effectively forecast and design products but also tools to help identify strategic opportunities. My first project in this area focused on market definition. This returned me to my original interest in product lines and interdependency. I tried to define a hierarchical market structure that created segments in which intrasegment competition existed but intersegment competition

was limited, so that little customer switching among segments occurred. This system was called PRODEGY and addressed PRODuct stratEGY by examining the coverage and duplication of a product line (Urban, Johnson, and Hauser 1984).

The second project grew out of the empirical experience I gained from applications of ASSESSOR. Contrary to the predictions of perceptual mapping models, I noticed that second brands in a market rarely received the same share as successful first entrants, even if they had parity positioning and allocated similar resource levels to advertising and promotion. This led to a statistical cross-sectional analysis of the effects of order of entry on market share (Urban et al. 1986). My coworkers and I confirmed this order-of-entry effect in a time-series cross-sectional analysis of test market scanner data (Kalyanaram and Urban 1992) and ethical pharmaceuticals (Berndt et al. 1995). Our work in this area was contemporaneous with the PIMS data analysis and led to interesting insights as the results were integrated into the growing literature on order of entry (Kalyanaram, Robinson, and Urban 1995).

Launch and Life Cycle Management

Recently, I returned to the topic I had begun with while at Northwestern—the life cycle phase. I have developed a set of concepts for trust-based marketing over the life cycle (Urban, Sultan, and Qualls 2000), in which the use of a virtual advisor on the Internet provides customers with full and accurate information and unbiased advice in a private, secure, branded, friendly, and easy-to-use system. This project grew out of a realization that my IA ideas could be used to help customers make better decisions on existing products, as well as test new products. Inverting IA gives a system that, when supplemented by a personal advisor, provides a trust-based marketing tool. Vince Barabba, Director of Market Planning at GM, encouraged me in this work and funded an MIT-sponsored research project. After developing a prototype, we tested it in the field by application with 300 customers to pickup truck purchasing. Initial results indicated substantial increases in trust, and presumably sales can be earned through the Internet virtual advisor. General Motors is now considering implementing such an advisor on one of its Internet sites.

Research Style

This chronology of my research indicates several threads I believe have been important in the success of my work. I briefly discuss some of these.

Managerial Need Input and Implementation

My research style is inductive, so I found it natural to work closely with managers making real decisions. I have always been impressed with the knowledge and insight managers accrue in facing tough decisions. As a marketer, I instinctively thought in terms of "customer needs" as I defined my customers for the analytic models I worked on as managers and tried to involve them early in the design of decision support models. In 1980, while I was reporting the results of a second PERCEPTOR study at Dow Corporation, the group

product manager leaned over and said, "Tell us something we do not know this time." It was new to me, but old stuff to him. Coping with implementation problems gave me a growing awareness of decision needs, so my following projects could be better fitted to the changing managerial decision requirements. Building models and applying them should be considered an organizational change process, not an exercise in mathematical gymnastics (Urban 1974b; Urban and Karash 1971). As a result, implementation should be considered from the start of the project to beyond its academic completion if academics are to keep their research relevant and improve the practice of marketing.

Equally important, this manager orientation can help generate funds for research assistants, computers, software, and large databases. I have also found that real applications after publication are useful in assuring that models are used and that evolutionary model extensions can create a positive benefit–cost ratio for managers.

Sometimes I was involved with applications as a consultant, but more often I have worked within companies I have founded with my students. We founded these companies to implement the new technologies, and though it is nice to be economically successful, my real motivation was to change the practice of management. For example, ASSESSOR was implemented by Management Decision Systems (and subsequently by Information Resources Inc., which bought Management Decision Systems, and then by MARC, which bought the ASSESSOR business from Information Resources Inc.). But the *Journal of Marketing Research* publication (Silk and Urban 1978) on ASSESSOR was used by Research International Inc. and Novaction Inc. to build competitive services. My best estimate is that more than 3000 consumer packaged goods products have been tested by the ASSESSOR methodology and its derivatives. I doubt that ASSESSOR would ever have been applied without Management Decision Systems as a proving ground. Similarly, IA was implemented by Marketing Technology Interface, as well as by others (e.g., Toyota, Intel, various market research companies), on the basis of the *Journal of Marketing Research* publications (Urban et al. 1996; Urban, Weinberg, and Hauser 1997). My role in these companies was limited to less than one day per week, but this was enough to help design the implementation procedures, interact with clients on design issues, and identify new research opportunities. Overall, my intent has been to build new decision tools that reflect customer needs and result in better products and reduced risk in new product innovation.

Matching Needs to Theory

Interacting with managers has been important to me to understand their needs. However, successful research also requires matching these needs to emerging theories and methods. When the two are in sync, the ensuing research can advance the state-of-the-art of marketing science as well as affect practice. Whether it is logit modeling, multidimensional scaling, utility theory, artificial intelligence, or virtual reality, I have always looked for problems that lend themselves to analysis through the most recent management and behavioral science technologies. I view this matching of theory to practice as a creative process.

Not all problems are interesting academically. Pure application projects may be useful but lie in the consulting domain. Pure theory can be important work, but I have tended to examine problems that require application of the latest theory. I think this tendency reflects my engineering training. However, I have often found that modeling requires both theory extension and innovation in estimation. For example, ASSESSOR came from Gillette's managerial problem, but the solution was in the then-new logit analysis. When logit was first applied, McFadden (1970) was just developing the maximum likelihood algorithms. I believe that ASSESSOR was the first application in the marketing of logit analysis. This theory enabled us to develop a new convergent forecasting methodology for premarket analysis. Similarly, when modeling the problem of premarket forecasting of new automobile sales, multiattribute utility theory was used and extended as a modeling framework (Roberts and Urban 1988). My recent work to develop trust on the Internet uses artificial intelligence theory to build a trusted advisor for automobile purchasing (Urban, Sultan, and Qualls 2000).

Power of Empirical Data

I have been a heavy user of measurement and empirical data. Whether it be test market, laboratory simulation, survey, market experiments, or virtual reality data, I have felt compelled to measure customer response. I have also been diligent in testing my model predictions. This is a difficult validation process but a critical one if marketing science is to progress. Often, these empirical efforts require creativity and innovation in measurement methodology and persistence in obtaining response and validation data, but the research power gained is well worth the effort.

Research Risks

A sense of adventure, entrepreneurship, and intellectual flexibility has served me well in my efforts to match theory with managerial relevance. I have generally avoided small epsilon extensions of existing work in favor of major problems that have not been extensively studied. This is ambitious and risky, because such innovative work takes a long time—especially if it is empirically based. Reviewers may not always understand the value of the new work, or else they find many methodological problems that can only be resolved by further research. Articles may be rejected or may need to be revised and aggressively defended. But some of them may win prizes. As I see it, the low-risk way to publication is to extend previous work in a field. When this is the case, previous contributors are usually (and naturally) chosen as reviewers, and they find it easier to understand and accept the extension, even if it is not a major breakthrough. Certainly, this evolutionary research path has moved the field forward. However, it is not my style. I like to find the big problems managers face and see if I can solve them. In this effort, I have often found that the literature constrains my thinking. As a result, I often work on a problem for months before reading the existing literature and modify my efforts to profit from prior research. It is a balance between creativity and constraint. Existing theory should be used, but for me the drivers are the problem and creativity rather than the placement the new work in the structure of the existing publication stream.

Programmatic Research

I am a research planner. My method is to lay out my research intentions over one- and five-year time horizons and examine how they fit into the accomplishment of my overall research goal—improving the productivity of new product development and advancing the art of marketing science. This sometimes calls for long-term projects—most of my models have a five-year or longer development time frame. (For example, ASSESSOR was started in 1973 and published in 1978, IA was started in 1990 and published in 1996 and 1997, and trust-based marketing was started in 1996 and published in 2000.) This may not maximize the number of publications, but those that do come out the end of the pipeline can be significant. Fortunately, MIT has been patient and has tenure criteria that do not depend solely on the amount of publication.

Balance

Real academic success requires that we balance research, teaching, and administration. My annual plans have always incorporated activities from each of these areas. Most often, for me, the one that slips is research. Academics need to be disciplined to keep research priority high. The demand for high-quality teaching has continually risen over time. To help cope with this, I have tried to tie my teaching to my research to make the most efficient use of my time. For example, Dave Montgomery and I taught a marketing modeling course based on our book *Management Science in Marketing* (1969). In many ways, that course was the foundation for my future modeling. I taught the first new product marketing and development course at MIT. This was synergistic with my ASSESSOR research and led to the development of teaching materials such as a textbook with John Hauser titled *Design and Marketing of New Products* (1993). When my focus became more strategic, I found that teaching marketing strategy and coauthoring a text and case book with Steve Star, *Advanced Marketing Strategy* (Urban and Star 1991), helped me understand and teach the wider context of marketing and analytical support. The secret for me is balancing activities and building synergy.

In administration, I served as deputy dean (1987–91) and then dean at MIT Sloan (1993–98). These were the most difficult times for me to achieve balance. I found as dean that I could continue research work (e.g., IA, trusted advisors on the Internet) I started before taking on the dean's responsibilities, but it was difficult to start new projects. The compensating benefit was that I learned a lot about operational management, gained a wider understanding of other fields of management, and was exposed to a wide array of interesting academics and top managers. It was clear in 1998, however, that I needed to choose between becoming a full-time administrator and a researcher/teacher. I chose the latter, but I am confident that the experience in the dean's office will make me a better teacher and give me a wider perspective on research. A sabbatical between each of the

two administrative positions was critical to rebalancing and energizing my research activity.

Another critical balance is between work and personal time allocations. The academic tenure system will push a professor so that it is difficult to have a life outside of work. I have found that it is critical to have a balance among work, family, and personal time. My wife Andrea recognized this problem early and signed me up for a sculpture course in 1970 at the local art museum. I enjoyed the class, and sculpture became a major hobby for me. I do mostly large steel and bronze work, but some stone and wood carving. I have more than 50 pieces in my yard and house. It is rewarding to come home from school to see the tangible results of cutting and welding steel for a couple hours, rather than the almost invisible results of daily research. Only after a long and frustrating period of research, writing, and revising is an article published. For me, sculpture provides unconstrained and immediate results. In addition, I believe sculpture has helped my research. Building a mathematical model taps the same sort of creative energy I find necessary in abstract sculpture. I have enjoyed sculpture, skiing, and sailing, but in retrospect I have put too much time into my work. If I had it to do over, I would put in fewer hours at MIT and more at home with my family. This would have been easier if the work had not been so exciting.

Great Coauthors

Good coauthors are an intellectual inspiration, and I have had some of the best. I am greatly indebted to them. I must acknowledge John Hauser (who has written more joint articles with me than anyone) for his rigor, scholarly standards, tight writing, and creative input. I have also benefited greatly from my other academic coauthors, including but not limited to Montgomery, Silk, Von Hippel, Star, Robinson, Berndt, Qualls, and Sultan (in chronological order of publication). It is also important to recognize my student coauthors, who have probably received less credit than they deserve for their input (e.g., Weinberg, Kalyanaram, Bohlman, Hulland, Roberts, Carter, Gaskin, Mucha, Johnson, Katz, and Karash, in reverse chronological order). Although I have generally not coauthored with line managers who have contributed to my work, special contributions were made by several of them (e.g., Ed Sellars of Noxell, Cal Hodock of Gillette, Tom Hatch of Miles Labs, John Dables of Buick, Roberta Chicos of MTI, and Sean McNamara and Vince Barabba of GM). Finally, John Little has been my mentor, and even though we have never coauthored a major article, he influenced every one of my works through his example, comments, and criticisms. John is a straight-thinking, rigorous scholar who believes in research paying off in practice.

My Future Plans

My current five-year research plan calls for extensions to my new product modeling and a major thrust toward developing models to exploit the potential of the Internet for marketing managers.

My work on trust-based advisors raises a challenge for managers. If trust-based marketing involves fair comparison between alternatives, what does a firm do if its products are not the best available? One solution is to back off of trust and push what you have. A better long-term solution is to find unmet needs and build the highest quality products to fill those needs. In my trust work, we applied the virtual advisor to pickup trucks, so it was natural with GM's research support to extend the research to discover whether we could "listen in" to the dialogue between the advisor and the real customer to find unmet needs. We applied utility theory to identify the most preferred truck and the level of utility. We posited that if the utility of the most preferred truck goes down after a question in the dialogue, this indicated an unmet need. For example, if a consumer wants a small truck, the Mazda might be the most preferred. After the consumer indicates that he or she wants to tow a boat, the Chevrolet Blazer may be the most preferred, but the utility is likely to have gone down. This drop indicates the need for a small truck that can tow. This unmet need is explored by a virtual engineer who asks the customer for details about the need (e.g., How much does the boat weigh? Why do you want a small truck? For gas efficiency? Parking?). This virtual engineer provides detailed input to the platform design team. A final component in this analysis is to put the customers on a design pallet and let them specify any truck they want (e.g., a mid-sized truck that can tow 6000 pounds and still be easily parked). This system has been estimated on the basis of 1000 customer interviews; the results indicate that it can identify significant new opportunities and the need-identification algorithms are robust (Urban and Hauser 2002).

The Internet is a risky area for research, because it is so volatile and we do not have much research banked in this area, but I believe that it will be a major additional channel for marketers in the future. Currently with the support of the Inter Public Group, my colleagues (Fareena Sultan, Venky Shankar, and Iakov Bart) and I are analyzing 6800 consumer evaluations of 24 leading Internet sites to find the determinants of trust on the basis of 120 cue assessments (e.g., security, privacy, personalness, information, navigation, advice, brand). This empirical analysis will supply understanding to enable effective experimentation of site design and consistency with other communication channels. We have begun experiments on the Internet to test the causal nature of trust-building in a site. This work is funded by Intel, and I hope in the next several years, in collaboration with others in the MIT marketing group (John D.C. Little, John Hauser, and Duncan Simester), to extend it to full adaptive marketing. We plan to draw on reinforcement learning (Sutton and Barto 1998). I also would like to study the use of the Internet as a direct manufacturer sales channel, complementary to the existing distribution system (e.g., Palm sells direct at the same price as through existing retail stores). Finally, I plan to study the implications of increasing customer power and the paradigm shift from push to trust-based marketing that this may precipitate.

The future is full of exciting marketing opportunities, and if we can effectively integrate theory, practice, empirical data, and creativity in research, we can improve the efficiency and effectiveness of marketing.

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The Social Life of Information

by John Seely Brown and Paul Duguid (Boston: Harvard Business School Press, 2000, 317 pp., $25.95 hardcover, $16.95 paperback)

"Info-enthusiasts" like to describe a glamorous, digitized future in which technology is capable of acquiring, storing, and transmitting information, as well as creating the information, independently of human agency. In this brave new world, intelligent agents (bots) will (it is presumed) free us from the drudgery of routine tasks, while we work from high-tech offices in our high-tech homes, constantly topping our supplies of lifelong learning, without the necessity of traditional universities. Technology will remove the mundane from our lives, leaving only the exciting, the interesting, the relevant. However, there is an alternative view.

The opposing view is that technology is somehow dangerous and is to be feared. It replaces human effort with machine power: It propels people along a trajectory that leads inexorably to the fragmentation of society. Technophobes view the problems of modern life as the inevitable result of technological growth. Moreover, they experience exquisite nostalgia for the past and grope for more authentic life, in which communities are physical rather than virtual.

Against the backdrop of these opposing worldviews, Brown and Duguid position *The Social Life of Information* as a caution against both perspectives. While acknowledging the problems of technology and information, they highlight that few people would really wish to return to a world without telephones, faxes, photocopiers, or e-mail. They describe a world in which society's fundamental need for information has been satisfied but where info-enthusiastic "tunnel vision" begets its own, often unacknowledged, problems. In essence, this book carries a simple message: Information does not and cannot exist in a vacuum but is socially, spatially, and historically situated.

Perhaps the most beguiling of the many tales the authors tell is of Paul Duguid's work in the archive of a 250-year-old business. As he trawled through correspondence dating back to the American Revolution, he was joined by a historian.

Because of the accumulation of dust and mites in the archive, Duguid was uncomfortable in the extreme, coughing and spluttering and contemplating how much easier it would be if the letters had been digitized. The historian seemed to be uninterested in the contents of the letters, reading barely a word. To Duguid's disgust, the historian concerned himself primarily with smelling each of the dust-laden documents. As a medical historian, he was interested in documenting outbreaks of cholera and explained that he was able to trace the spread of the disease because all letters from an infected town had been treated with vinegar. The faint traces of vinegar remained after 250 years, making it possible for the historian to locate what he sought. As Duguid explains:

> His research threw new light on the letters I was reading. Now cheery letters telling customers and creditors that all was well, business thriving, and the future rosy, read a little differently if a whiff of vinegar came off the page. Then the correspondent's cheeriness might be an act to prevent the collapse of business confidence—unaware that he or she might be betrayed by a hint of vinegar. (p. 174)

The point is, information cannot always be easily or usefully divorced from context. My once pristine copy of *The Social Life of Information* has taken something of a battering. Many pages are dog-eared, margins annotated, and passages underlined. Coffee stains celebrate several excerpts that demanded close attention. I wonder if other readers who happen upon my copy of the book will be distracted or intrigued by its current condition. Those who believe that books should remain immaculate will be irritated, whereas those who believe that books are principally social vehicles will be intrigued. Indeed, because future readers are exposed both to Brown and Duguid's thoughts and ideas as represented in this text and to my own thoughts and ideas as a result of my reading of it, the original text remains unchanged, yet in many subtle ways I have added to it. If (in the unlikely event) I become famous, this particular copy of the book would command a significantly higher social (and probably market) value than one hot off the printing press. This is one of the central arguments of Brown and Duguid's work. That is, the context in which information is situated is fundamental to its understanding and use. Marketers are already aware of this phenomenon in terms of the market value of sought-after memorabilia and the profitability associated with merchandising for a movie, an event, or an individual. What is particularly interesting for me is that marketers implicitly recognize the importance of the social context of products and services and their worth in communicating shared values among interested communities (see Belk, Wallendorf, and Sherry 1989; Cova 1997). Yet at the same time, we seem to ignore that, in the same ways, the value of information depends on context.

Like the info-enthusiasts Brown and Duguid hope to challenge, many marketers adhere to the notion that contemporary marketing problems can be solved by access to more information. In particular, changes in the social landscape and greater competition among organizations demand that individual marketers develop closer relationships with their customers and other stakeholders. Such attempts focus inevitably on database marketing (Copulsky and Wolf 1990; Goldberg 1988) to enhance customer information, often without customers' knowledge or consent (see Shultz 1993). Despite this operational focus, it is widely acknowledged that good relationships rely more on issues of sociability such as the development of trust, commitment, mutual interest, respect, and shared values (see Dwyer, Schurr, and Oh 1987; Gundlach and Murphy 1993; Wilson 1995) than they do on the garnering of information. Thus, attempts to generate something akin to close interpersonal relationships between buyers and sellers through a technological interface seem destined to fail. As Brown and Duguid highlight, "generations of confident videophones, conferencing tools, and technologies for tele-presence are still far from capturing the essence of a firm handshake or a straight look in the eye" (p. 5).

The focus on both information and technology in contemporary marketing is understandable. Many marketers view consumers as information-processing problem solvers. Perceiving the world as information oriented leads marketers to contemplate problems in terms of the need for more information. In this regard, the database, sophisticated customer profiling, geodemographics, and the like are regarded as important solutions in the competitive war marketers wage for the hearts and minds of consumers. More recently, the Internet seems (to some) to offer possibilities for relationship building in dazzlingly innovative ways. According to Hoffman, Novak, and Chatterjee (1995), "the popularity of WWW as a commercial medium … is due to its ability to facilitate global sharing of information and resources, and its potential to provide an efficient channel for advertising, marketing, and even direct distribution of certain goods and information services."

The Internet is therefore conceptualized as an entirely new channel of distribution and a revolutionary communication system. Interaction takes place in the "marketspace" (Rayport and Sviokla 1994) rather than the marketplace, and as such, traditional interpersonal interactions between buyers and sellers are eliminated in favor of virtual ones. The true effects of such a shift have yet to be observed.

Brown and Duguid's thesis counteracts theories of a future consisting of bytes rather than atoms, a future in which communication is digital rather than face-to-face, and a future in which the only information worth considering is online. Contemporary conceptualizations of communication rely almost exclusively on the conduit metaphor (Reddy 1993). That is, language about language is metaphorically structured. Ideas (or meanings) are viewed as objects and linguistic expressions as containers. Communication involves putting ideas (objects) into words (containers) and "sending" them (along a conduit) to a receiver who takes the idea–objects out of the word–containers. Within this model of communication, the conduit itself is less important than the word–containers employed. That is, there is no distinction among face-to-face communication, telephone, paper, and digitized documents. What is regarded as important is the sender's ability to encode and the receiver's ability to decode. Although most will readily accept the limitations of this conceptualization, there is no doubt that the conduit metaphor is one of the most influential in the practice of our

everyday lives. However, as McLuhan (1962) reminds us, the means of communication and the context in which it takes place are themselves of great importance in the understanding of that communication.

One of the most compelling arguments in Brown and Duguid's book is to "look … to things that lie beyond information" (p. 15) and to move beyond the tunnel vision of the information-orientated lens. Brown and Duguid counsel the reader to look more to the ways in which society and information interact and intertwine, because, at the end of the day, "it is people, in their communities, organizations, and institutions, who ultimately decide what it all means and why it matters" (p. 18). Indeed, despite being positioned as the functional department that understands consumers, modern marketing seems particularly susceptible to falling into the trap of believing that data equal customer knowledge, in an unproblematic fashion: that data collected on individual consumers is isomorphic with those consumers. However, collecting data on people is a poor substitute for meeting them. In many cases, the profile falls short because of the quality (or lack of it) of the original data.

The Social Life of Information presses its case further by considering how developments, such as digitized and personalized newspapers, may undermine the social fabric of society by inhibiting the emergence of shared values and a sense of community that arise as a result of reading the same text. Direct marketers might also consider how personalized communication undermines the importance of shared meanings in the creation and maintenance of brand value (Patterson 1998).

Brown and Duguid also launch an intelligent attack on those who peddle distance education. The distance learning myth is predicated on the notion that universities are primarily information providers and that in the future there will be a more limited role for traditional universities. The authors defuse such notions by arguing that universities are much more than mere information spouts. Indeed, the traditional university campus facilitates the mixing of teaching and learning communities and the sharing of ideas from which creative tensions emerge. In contrast, the plug-and-pay modules delivered by specialists in a virtual world inhibit social interaction. Moreover, in the world of virtual education, credentials amount to "little more than an intellectual bill of lading, a receipt for knowledge on board much like any other receipt for freight-on-board" (p. 219). In short, the potential for "knowledge markets" is limited, because the interactions that are not easily valued in the market remain socially valuable experiences of the traditional campus:

> The technological reach that conquers distance doesn't necessarily provide the reciprocity that allows people to form, join in, or participate in worthwhile learning communities. Yet it can seem to. Certainly, the word community crops up all over the Web sites of distance courses. But it refers to groups that are communities in little more than the sense that eBay is a community. More generally, the 'Net can give the appearance of membership or access that it does not provide in a meaningful way." (pp. 225–26)

Parenthetically, the authors point out that the ability to send a message to president@whitehouse.gov infers greater access, participation, and social proximity than is actually the case. Many contemporary consumers of politics, education, and other products and services have less access than ever before but are encouraged to maintain the illusion that they are members of an inclusive society.

Brown and Duguid doubt that the much-touted information-oriented future will ever be realized. Taking a historical perspective, they draw attention to the failure of the prophecies of years gone by to materialize. Fewer people work from home than even the most cautious prophets foretold. Hot-desking, epitomized by the much-publicized changes to Chiat Day's office structure, has failed to become the norm.[1] Mass customization has yet to fulfill its promise and remains likely to favor large organizations rather than a new generation of niche marketers. As Brown and Duguid note, "The Henry Ford of the new economy would tell us that we can all have jeans made to measure, so long as they are Levis" (p. 27).

Technological "progress" has not engendered greater representation of individuals or, indeed, of governments. Organizations have not become flatter and employees more empowered. Indeed, the converse may be true as information technologies centralize authority, perhaps having the opposite effect of disempowering the individual. As the authors point out, the U.S. Navy resisted the introduction of ship-to-shore radio, because it would lose independence of action if higher commanders could communicate and intervene. Undoubtedly, many of marketing's foot soldiers understand this as they deliver their scripted dialogues while working on the telephones and conduct their day-to-day activities under the camera's gaze. In an age when customer relationships are viewed as critical, technology demands that traditional human interaction and conversation are eschewed in favor of order, data collection, and control. Yet how many consumers are frustrated when forced to interact with marketers who cannot and will not deviate from their carefully scripted spiel? Brown and Duguid point out that the legendary computer program, Eliza (which was intended to masquerade as a therapist and was developed in 1966), is the forerunner of those currently used in customer service and that, even today, the legacy remains: "Irate customers often resemble the deranged and customer service agents, automatons" (p. 36).

The Social Life of Information is a good antidote to the mindless prophesies of a bright info-technological future. However, its deeper message is more compelling: Technological progress is impossible and useless without human interaction. Just ask any father who has to call on his eight-year-old son or daughter to help him program the videocassette recorder.

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[1]In the early 1990s, the global advertiser Chiat Day attempted to change the way its employees worked. Its new building in Los Angeles was unconventional, eschewing dedicated offices and desks for its personnel. Each day, employees were required to check out a laptop computer and a cellular phone and find a place to work. Within a few years, the experiment was deemed to have failed. Rather than encouraging creativity, it had resulted in chaos. Within five years, Chiat Day returned to a more familiar office structure and more conventional ways of working.

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