

Commentary by John D. C. Little, Leonard M. Lodish, John R. Hauser, and Glen L. Urban

Our friend and fellow academic Hermann Simon sees the marketing science glass as half empty. We're sure it's at least half full.

Ivory Tower or Open House?

Simon, with his reference to the ivory tower, implies that many academics are isolated from business reality—and this is bad. *We agree.* However, the situation is not especially new nor is it confined to marketing science. If Simon's paper helps change this just a little, it will have done an important service.

Where we take issue with Simon is whether the picture is as bleak as he paints. We believe that good academic marketing science and worldly impact go together quite nicely. By selecting only two areas for analysis in depth, Simon has missed some significant successes. Many of these have been *created by marketing science academics*, although, increasingly, new developments are also coming from leading edge practitioners trained in marketing science, which is good. Our examples are, like Simon's, heavily biased by personal experiences, but consider the following widely used models from the 1970s and early 1980s in the consumer packaged goods industry: ASSESSOR [Silk and Urban 1978], PERCEPTOR [Urban 1975], BRANDAID [Little 1975], CALLPLAN [Lodish 1971], DEFENDER [Hauser and Shugan 1983], PRODEGY [Urban, Johnson, and Hauser 1984], and PROMOTER [Abraham and Lodish 1987]. In the 1980s and 1990s an explosion of new data and computer power brought a second generation that includes PROMOTIONSCAN [Abraham and Lodish forthcoming], COUPONSCAN [Little forthcoming] COVERSTORY [Schmitz, Armstrong, and Little 1990], SALESPARTNER [Schmitz forthcoming], and MARKET SIMULATOR [Little 1993]. These marketing science products have had thousands of real world applications. And they have also spawned competitive imitations, although only a few of the latter have been published because the technology has diffused into everyday use. To give just one illustration, the basic paper describing the ASSESSOR pre-test market simulation methodology appeared in the *Journal of Marketing Research* [Silk and

Urban 1978]. Subsequently, the methodology was adapted into such commercial services as Bases, Designer, Sensor, and Entro. Over 6,000 new products were tested from 1975 to 1992 with these systems.

Consumer Packaged Goods: End or Beginning?

Although Simon may wish to dismiss research on consumer packaged goods (CPG) as "coffee marketing science," let us note that grocery products and associated health and beauty aids constitute 20 percent of retail sales and represent many hundreds of billions of dollars worldwide. The CPG industry has always provided a development laboratory for new research ideas. Successes there have been picked up and modified to fit other industries. In addition much new work has developed outside CPG. Just taking the TIMS Edelman Prize finalists as examples, we find such non-CPG work as Gensch, Aversa, and Moore [1990] at ABB Electric (power transformers), Lodish et al. [1988] at Syntex (pharmaceuticals) and Kuritsky et al. [1982] at ATT Long Lines (long distance telephone calls).

Two examples from our own research illustrate non-CPG impacts. The first is quality function deployment (QFD) and the "voice of the customer." QFD began in Japanese industry and came to the US in the late 1980s. At the heart of QFD is a matrix representation of the standard marketing science models of consumer perception, preference, and choice, as used in new product development. QFD was popularized by industry success and academic publication [Hauser and Clausing 1988] and is now approaching conjoint analysis in number of applications, the majority of which are business-to-business products and services. Although QFD started in industry, academic research—some new and some based on 20-year-old publications—has helped improve applications, making them more effective and profitable. The greatest impact has been in engineering and R&D; marketing science is not limited to the marketing function.

Another example outside of CPG is prelaunch forecasting of new consumer durables [Urban, Hauser, and Roberts 1990]. This stream of research actually began in CPG with the ASSESSOR model mentioned earlier and has evolved to durable goods. Most recently, prelaunch forecasting concepts are being extended in business-to-business environments by means of interactive multimedia technology using a methodology called Information Acceleration.

Problems or Opportunities?

Where Simon sees failures, we see chances to innovate. Opportunities are emerging that were not conceived of a few years ago. For example, the combination of big customer data bases and flexible information technology that can tailor products to individual needs has created mass markets with segments of size one. These are reachable through new kinds of direct marketing [Blattberg and Deighton 1991]. Such situations call out for models, data analysis, and decision methods. New technology, such as virtual reality, fiber optics into the home, and global telecommunications also make possible remarkable marketing initiatives that need to be analyzed and modeled. Finally, national quality awards, such as the US Baldrige Award, place heavy weight on serving the customer. As engineering, manufacturing, and other areas of the firm integrate their activities with marketing and begin to focus on the customer, marketing science is finding new clients and becoming a top-management concern.

Econometrics or Marketing Models?

Simon reports disappointment with econometric modeling from his own consulting practice. He ascribes this in part to the fact that econometric models can only analyze the past (sometimes described as driving by looking in the rear view mirror).

Some of us might have predicted his disappointment [Little 1970, Urban 1974]. But is past data the problem? Strictly speaking, *all* the information available to the manager comes from the past, and so that cannot really be the difficulty. It is by using *models* (mental, verbal, and mathematical) plus a certain amount of data that managers fashion their visions of the future and how they can affect it. Our experience suggests that econometric analyses have an important role—especially in measurement—but they often provide only partial information for addressing decision problems. Out of this dilemma have come such ideas as eclectic calibration, decision calculus, using a model to define data needs, and borrowing expert systems techniques to help calibrate models and look for news in data. Much richer views of the world and of problem solving are available from marketing science than are encompassed in standard econometric models built on single data sets.

High Level or High Impact?

One of Simon's concerns is that marketing science has focused on low-level operational problems. Is not impact more important? Sophisticated systems based on marketing science have become essential to CPG companies. These systems (which are not adopted without top management support) empower the front-line people of the organization—salespeople and brand managers. This is high value-added stuff.

On the strategic level, marketing (let alone marketing science) has come in for considerable criticism—some wags have suggested that marketing is too important to be left to the marketers. But there are good examples in which marketing scientists have worked closely with top managers on strategy. One of these is the ABB Electric case mentioned earlier.

More specifically, let us consider Simon's concern that "hardly any of the great themes of our times (for example, strategic planning, globalization, competitive strategy, core competence, lean management) originated from or have been strongly influenced by marketing scientists." Contributions to these themes have come from both industry and academia and from many disciplines. It is fair to say that marketing science has not played a big role, but its contributions are far from nil. Marketing science helps us to understand the world better in useful ways—by uncovering new phenomena; organizing them intellectually in taxonomies, models, and other structures; developing measurement methods; and coalescing all these elements into problem-solving tools and paradigms. Such knowledge contributes to strategic thinking. This is illustrated in Urban and Star's [1991] recent text, *Advanced Marketing Strategy*; the book weaves much material from marketing science into the analysis and formulation of marketing strategy. The authors propose three levels of problem analysis. All strategy issues require Level 1 (clear problem definition and reasoning). Many require Level 2 (simple models, statistics, and data), and a few deserve Level 3 (complex marketing science modeling and optimization). Such a categorization suggests that we should expect to find complex marketing science applications only infrequently in practice, but this does not mean that modeling is unimportant. In fact appropriate Level 3 analysis often is critical to the future of a company (for example, go-no go decisions about new products).

Competitive strategy has been an active and rapidly growing theoretical area in marketing journals for the past 10 years and has, for example, contributed significantly to our understanding of channel relationships. Competitive thinking now pervades most published marketing science, in-

cluding advertising response modeling, product positioning analyses, defensive strategy, first-mover advantages, and promotion analyses. Indeed, it is difficult to publish a theoretical paper if competitive strategy is not considered in some form. And this thinking is invading the classroom where a new generation of marketing scientists and marketing practitioners are being trained. Even the concept of core competence, popularized by Prahalad and Hamel [1990], has antecedents in the writings of a marketing scientist. Several key ideas and a prime example appeared in an earlier academic article, "A resource-based view of the firm" [Wernerfelt 1984].

One area of activity that holds senior management's attention today is customer satisfaction. Customer satisfaction is now being used to provide incentives to employees at all levels of the organization. R&D employees are evaluated on their ability to satisfy customers profitably, those in technical support are judged by whether the customer is satisfied with their solutions, telephone reps receive bonuses based on customer-satisfaction scores, and managers at all levels receive bonuses and other incentives based on customer satisfaction. Marketing science researchers are helping organizations tie rewards based on customer satisfaction to profitability. Improved measurement [Zeithaml, Parasuraman and Berry 1990], improved understanding of the expectation formation process [Boulding et al. 1992], and mathematical theory [Hauser, Simester and Wernerfelt 1992] are all influencing top-management thinking. At the national level, countries such as Sweden are developing customer-satisfaction barometers [Fornell 1992].

Are the Journals the Problem?

Collectively, we have written and refereed many articles and served on a variety of editorial boards. Our experience is that *journals want marketing science applications and are extremely pleased to publish analyses that have managerial relevance*. As both authors and reviewers, we have found that relevance, business impact, and real data are strongly positive attributes in favor of publication. They are not the only criteria, nor should they be, but submitted papers do not fail to find a home just because they are applications. There certainly is, to use Simon's words, room for mathematical sophistication *and* applicability.

Furthermore, marketing science, as a field, is eclectic; it is not limited to quantitative models and measurements or even to the natural-science paradigm. The most influential journal articles are those that draw from a

variety of paradigms to solve real problems. For example, *Marketing Science* has a behavioral science editor and has published influential behavioral analyses. We support Simon's call for field-based research. For example, one of our students [Griffin 1992] observed 35 industrial applications of QFD in the field and was able to identify generalized trends and new insights. Field research is getting close to our customers—a maxim of the 1990s. *Marketing Science* encourages field research, although Simon has a point: the journal has published but one such article so far [Ghemawat 1991]. More would be welcome.

We believe that the journals are not the problem; the issue is supply, not demand. If the journals are heavy on mathematical theory, it is because not enough innovative applications and field studies are being submitted. This brings us to a view of the field and how research in marketing science might be enhanced.

Our Vision of Marketing Science

Science and technology have transformed the world and continue to do so at a remarkable rate. Marketing science seeks to create a science and technology for marketing. Doing this requires much new basic knowledge. However, marketing, like engineering, is a practical subject. The long-run goal of research in the field is to improve its usefulness. Therefore, in selecting topics to work on, academics do well to choose fundamental problems that, if solved, can lead eventually to enhanced practice. Furthermore, the industrial world is a laboratory where academics can discover new phenomena and test ideas—although it is also critical, from time to time, to back away from the external world to reflect, analyze, synthesize and develop new methods *per se*.

There cannot be more than a thousand people worldwide who call themselves marketing scientists. This is a small band to affect the large realm of marketing practice. We think the accomplishments of marketing scientists have been good but could be better. Along with Simon we feel that academics should spend more time learning from industry. There they can find important, interesting problems and do research that will create new knowledge. Such research must not be confused with repetitive consulting that simply disseminates existing practice—an activity limited in what it can contribute to fundamental knowledge.

Institutional arrangements can foster fruitful outreach. Research centers at universities supported by consortia of companies can investigate new areas. Cost and risk are shared across the company partners, who

gain a critical timing advantage in using new knowledge generated. At the same time the centers can encourage academic publication with its long lead times. Perhaps a mechanism can be found whereby company-university partnerships that lead to productivity gains for the company can return some of those gains as resources for future use by the university. Companies can also do much individually by sponsoring faculty internships, inviting student projects, and providing data. The TIMS College on Marketing might offer its own version of the Edelman Prize by making an award for the best implemented marketing science practice.

Although we believe Simon's analysis of marketing science today is incomplete and unwarrantedly bleak, we applaud his wake-up call. There is much exciting scientific work to do, but much of it won't be done without active excursions into the business world.

References

- Abraham, Magid and Lodish, Leonard M. 1987, "PROMOTER: An automated promotion evaluation system," *Marketing Science*, Vol. 6, No. 2 (Spring), pp. 101-123.
- Abraham, Magid and Lodish, Leonard M. forthcoming, "An implemented system for improving promotion productivity using store scanner data," *Marketing Science*.
- Blattberg, Robert C. and Deighton, John, 1991, "Interactive marketing: Exploiting the age of addressability," *Sloan Management Review*, Vol. 33, No. 1 (Fall), pp. 5-14.
- Boulding, William; Staelin, Richard; Kalra, Ajay; and Zeithaml Valerie A., 1992, "A dynamic process model of service quality: From expectations to behavioral intentions," Working paper, Duke University (January).
- Fornell, Claes 1992, "A national customer satisfaction barometer," *Journal of Marketing*, Vol. 56, No. 1 (January), pp. 6-21.
- Gensch, Dennis; Aversa, Nicola; and Moore, Steven P., 1990, "A choice modeling market information system that enabled ABB Electric to expand its market share," *Interfaces*, Vol. 20, No. 1, (January), pp. 6-25.
- Ghemawat, Pankaj 1991, "Market incumbency and technological inertia," *Marketing Science*, Vol. 10, No. 2 (Spring), pp. 161-171.
- Griffin, Abbie 1992, "Evaluating QFD's use in US firms as a process for developing products," *Journal of Product Innovation Management*, Vol. 9, No. 3 (September), pp. 171-187.
- Hauser, John R. and Clausing, Donald P. 1988, "The house of quality," *Harvard Business Review*, Vol. 66, No. 3 (May-June), pp. 63-73.
- Hauser, John R.; Simester, Duncan I.; and Wernerfelt, Birger 1992, "Customer-satisfaction based incentive systems," M.I.T. Sloan School working paper (November).
- Hauser, John R. and Shugan, Steven M. 1983, "Defensive marketing strategies," *Marketing Science*, Vol. 2, No. 4 (Fall), pp. 319-360.
- Kuritsky, Alan; Little, John D. C.; Silk, Alvin J.; and Bassman, Emily 1982, "The development, testing, and execution of a new marketing strategy at AT&T Long Lines," *Interfaces*, Vol. 12, No. 6 (December), pp. 22-37.
- Little, John D. C. 1970, "Models and managers: The concept of a decision calculus," *Management Science*, Vol. 16, No. 8 (April), pp. 466-485.
- Little, John D. C. 1975, "BRANDAID: A marketing-mix model, Part 1: Structure and Part 2: Implementation, calibration, and case study," *Operations Research*, Vol. 23, No. 4 (July), pp. 628-673.
- Little, John D. C. forthcoming, "Modeling market response in large customer panels," in *The Marketing Information Revolution*, eds., Robert Blattberg, Rashi Glazer and John Little, Harvard Business School Press, Cambridge, MA.
- Lodish, Leonard M. 1971, "CALLPLAN: An interactive salesman's call planning system," *Management Science*, Vol. 18, No. 4, Part 2 (December), pp. 25-40.
- Lodish, Leonard M.; Curtis, Ellen; Ness, Michael; and Simpson, M. Kerry, 1988, "Sales force sizing and deployment using a decision calculus model at Syntex Laboratories," *Interfaces*, Vol. 18, No. 1 (January), pp. 5-20.
- Prahalad, C. K. and Hamel, Gary 1990, "The core competence of the corporation," *Harvard Business Review*, Vol. 68, No. 3 (May-June), pp. 79-91.
- Schmitz, John D. forthcoming, "Expert systems for scanner data in practice," in *The Marketing Information Revolution*, eds., Robert Blattberg, Rashi Glazer and John Little, Harvard Business School Press, Cambridge, MA.
- Schmitz, John D.; Armstrong, Gordon D.; and Little, John D. C. 1990, "CoverStory automated news finding in marketing," *Interfaces*, Vol. 20, No. 6, (November), pp. 29-38.
- Silk, Alvin J. and Urban, Glen L. 1978, "Pre-test market evaluation of new packaged goods: A model and measurement methodology," *Journal of Marketing Research*, Vol. 15, No. 2 (May), pp. 171-91.
- Urban, Glen L. 1974, "Building models for decision-makers," *Interfaces*, Vol. 4, No. 3 (May), pp. 1-11.
- Urban, Glen L. 1975, "PERCEPTOR: A model for product positioning," *Management Science*, Vol. 21, No. 8 (April), pp. 858-871.
- Urban, Glen L.; Hauser, John R.; and Roberts, John H., 1990, "Prelaunch forecasting of new automobiles," *Management Science*, Vol. 36, No. 4, pp. 401-421.
- Urban, Glen L.; Johnson, Philip L.; and Hauser, John R., 1984, "Testing competitive market structures," *Marketing Science*, Vol. 3, No. 2, pp. 83-112.
- Urban, Glen L. and Star, Steven 1991, *Advanced Marketing Strategy*, Prentice Hall, Englewood Cliffs, NJ.
- Wernerfelt, Birger 1984, "A resource-based view of the firm," *Strategic Management Journal*, Vol. 5, No. 2 (April-June), pp. 171-180.
- Zeithaml, Valerie A.; Parasuraman, A.; and Berry, Leonard L. 1990, *Delivering Quality Service: Balancing Customer Perceptions and Expectations*, The Free Press, New York.