

it's going to cost you \$5 and you plug it in and electric usage goes down five per cent.' Well, no, they wouldn't purchase it; they're trying to increase the usage of electricity. 'Well, why do you have all these publications sitting around that suggest you're trying to do otherwise?' 'Well, you gotta consider all sides of the picture.' "

Armstrong also wants to improve the scholarly and academic environment. As his obituary has it, he tried to write a technical book that would be "interesting and fun and useful." The book, *Long-Range Forecasting: From Crystal Ball to Computer*, was published by Wiley-Interscience last year. It describes forecasting methods, tells how to structure a forecasting problem, and suggests ways to evaluate forecasting models. Armstrong's major assumption, which comes from psychology and sociology, is that people are reluctant to accept evidence that disconfirms their beliefs, and the stronger the negative evidence, the stronger the beliefs grow. Econometricians are a case in point. He writes of the "folklore," or what econometricians believe, and the "fact" of econometrics. The folklore, he says, is that econometric methods are more accurate than other methods for short-range forecasts, that complex models are more accurate than simple ones, and that "expertise is important in forecasting change." The fact, he continues, is that "there is little evidence to support them and much evidence to refute them." His book is thick, partly because of the evidence he cites on this and many other matters.

The book, it can be fairly said, is also fun. Armstrong draws examples from such unimposing and often illuminat-

ing sources as newspaper stories, cartoons, and anecdotes from friends. Even the two bibliographies are interesting; they are annotated, often with comments on the quality of the writing of the entries. One bibliography is a "Don't" list, which includes articles whose titles might seem to apply to the subject of forecasting but whose content either strays from the title or is buried in jargon. In the other bibliography, Armstrong has starred the entries according to their excellence, as they do for movies on television.

Armstrong has developed a reputation as a maverick in his profession, and sometimes he is respected for it. A version of his attack on econometricians was published in the scholarly *Journal of Business*, with replies from seven econometricians in what Armstrong calls a "science court."

The editor introduced the essay as "a different genre of submission," a departure from the journal's usual diet of "positive research" in business administration. The replies ranged from "I have long smelled a rat with respect to econometric forecasting, and I am glad Professor Armstrong finally flushed one out" to "the author's defective survey methodology and inadequate and sometimes conflicting interpretations of very limited empirical evidence make me conclude that his paper is, in the main, a contribution to the folklore. . . ."

In a study of his field, he was recognized as one of the 30 most frequently cited marketing professors in the world ("I was only fourth place in this department [of about 12] because this department is by far the most frequently cited," he says). A departmental evaluation he showed us praised his role as a "gadfly," although it also worried about his "credibility and respect as a serious scholar."

His idea of economists is typified by a joke he tells of a chemist, a physicist, and an economist, all stranded on an island with only a can of beans. The chemist says that he will open the can by building a fire under it and be able to determine in advance just when it will explode. The physicist says that he will plot the trajectory of the beans so that they can be caught on leaves placed carefully on the ground. The economist says, "This is all too complicated. Let's assume we have a can opener and go from there."

"In economics, I don't think it's important to relate back to reality," says Armstrong. "In fact, there are a lot of advantages not to." He mentions an annual report from a steel company which had a statement like "we found it necessary to raise prices to meet competition." Armstrong replies, "I always thought it was the other way around. Then I found there was something called 'intuitive economics,' the way people think the world *should* operate." When airlines suffered with low profits and half-empty planes, he says, they tried to raise prices, even though

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And here's a look at a Wharton School maverick

In his obituary, Dr. J. Scott Armstrong writes—for he writes his obituary as a way of clarifying his career goals (he has his students do the same)—that he was an "improver." As he repeats this rubric in his Dietrich Hall office, whence he holds forth as an associate professor of marketing, he snorts as if the label is too do-goodish. He has in mind improvements for others, not self-improvement. In fact, his role as improver has not done him much good at all; he notes that he has been fired from most of the industry jobs and consulting assignments he has held.

His improvements, it turns out, are not the sort that some managements appreciate—such notions as putting employees on the board of directors or letting workers set their own standards rather than having consultants like himself conduct "time-motion" studies to formulate standards.

He approached an electric utility with an idea for cutting down on the use of electricity. "Well," he says, "they weren't really interested in that. They kept saying, 'Well, what's your plan?' I said, 'Well, before I tell you my plan, are you interested?' 'We'll decide that later,' they said. After about a half-hour of this frustration, I said, 'Well, let's just assume I'm from Mars and I have this magic machine and

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Scott Armstrong: 'improver'

empirical studies showed that a price rise would push revenues even lower.

He lists the "four functions of an efficient marketing system"—good information for consumers, free choice by consumers, free entry for producers, and no collusion among producers. "But what does the market manager try to do?" he asks. "He tries to do the opposite of everything that creates an effective market; it's even better if he can get the government to help him."

Academicians, he feels, suffer illusions of their own. He enjoys the graffiti borrowed from H. L. Mencken and found on a Wharton wall: "For every problem, economists have an answer: Simple, neat, and wrong." In his book, he mentions a Penn dissertation which "failed to show any economic downturn during the Great Depression."

Academicians also tend to examine easy issues and ignore "threatening" ones, he says. He cites the Panalba drug case. The manufacturer of the medication had to be ordered by the Supreme Court to remove it from the market, even though, he says, a demonstrated side effect was that it killed some patients and even though its benefits were readily available in drugs made by competitors. The company managers argued that they were beholden to the stockholders. "You don't find much written about that. You find some stuff written about social responsibility in marketing or social responsibility in business. Usually it's a bunch of words," Armstrong says. "What I'm saying is: No, that's crazy. As long as you've got the system set up like this, somebody else is going to get hurt."

He gained some notoriety by making a role-playing game from the case. Subjects were asked to pretend they are members of the board of a drug company which has invested \$18 million in a drug that probably will kill 18 people a year. None of the 57 groups with which he has conducted this game chose to withdraw it from the market. He reports that some executives asked to play the game tore up the directions when they read them. (In his book, Armstrong adds that, in a survey of non-role-players, over half stated that they would remove the drug—a discrepancy which he takes to suggest that surveys are inaccurate predictors.)

"Can we teach social responsibility?" he asks. "Probably not." He does, however, have some ideas for improving education. Armstrong would like students to take more responsibility for their own education, and he has worked out a program of what he calls a "self-oriented skill training," or "natural learning," in which the learner sets objectives, selects "active learning tasks," obtains "feedback" (Armstrong has not exorcised the demon jargon entirely), and applies what is learned. In his courses, he offers students

two ways to proceed—the traditional one of test-taking, each test counting for designated percentages of the final grade, and one in which the grade is based on time expended (students get readings and exercises from him). About 90 per cent of the graduate students and 66 per cent of the undergraduates choose his system (although, he adds, many students more comfortable with the traditional method drop the course); students also write diaries—"for undergraduates, I audit the diary because they do a lot of cheating."

Armstrong feels that most of what is normally taught is "irrelevant information," safe material which does not threaten the student. He remembers studying analytic geometry but never using it (he worked for several years as an industrial engineer) and mentions visiting a college friend who similarly never used it but who spent part of their evening together going through a book in order to teach it the next day. Armstrong would have students learn how to make oral presentations, write technical and management reports, run group meetings, structure problems, implement change, plan, and manage time—some of which they can learn, he says, in the Wharton Communications Program.

And he would prefer writing to be clear, despite the penalty that might bring to one's professional stature. In a paper he wrote this fall, he found a positive correlation between the prestige of 10 management journals and their "fog indices," or reading difficulty. When he asked 32 faculty members from the Wharton School, New York University, and Columbia University to "rate the prestige of four equivalent passages from management journals," he notes, "those passages that were more difficult to read were rated higher in terms of research competence."