

Wen-Bin 'Vincent' Yu of Missouri University of Science and Technology recently interviewed Professor Charles P. Bonini of Stanford University. They talked about Dr. Bonini's long association with the Decision Sciences Institute, his views on emerging areas of decision sciences and evolution of the Institute, his current interests, and his advice to budding decision scientists. [Krishna S. Dhir, Editor]



A Conversation with... Charles Pius Bonini

by Wen-Bin 'Vincent' Yu, Missouri
University of Science and Technology

Yu: How did your association with the Decision Sciences Institute develop?

Bonini: My association with the Decision Sciences Institute began about 36 years ago. Back then it was called AIDS (American Institute for Decision Sciences). One of my doctoral students and I had done some research involving probabilities and decision analysis. I noted that Western AIDS was scheduled to meet in southern California. We submitted a paper and attended the meeting. I met the local AIDS folks as well as the home office ones. I got involved in the regional association and that led to involvement at the national AIDS. Next I began attending national meetings and met many colleagues of whom I knew from reading their books and articles. At the Institute I got to know them on a personal basis. I got elected as a director (now called vice president). I was involved in organizing various programs of the Institute and served as a reviewer for the *Decision Sciences* journal. I was fortunate to be elected president in 1977-78. I continue to be active in the organization.

Yu: I, too, am interested in quantitative analysis and business analytics. In regard to operation research (optimizations and statistics), what are the differences in these fields between now and when you started your academia career?

Bonini: Back when I began my career, "decision analysis" was a relatively new subject. Howard Raiffa at Harvard was one of the pioneers. In addition, several seminal books were published in the late 1950s. A book of which I was a co-author, *Quantitative Analysis for Business Decisions*, had a substantial segment on decision analysis and was widely used in business schools. Many schools had courses devoted entirely to decision making under uncertainty. Today, decision trees and related topics are considered "old hat." Decision analysis tends to be lumped in with statistics or other topics. It is not emphasized as much as it used to be. At that time, the entire field of operations research was also relatively new. Linear programming software was just becoming available. It was an exciting time.

Yu: How is data mining different from traditional data analysis? Is it simply a sugar coded name for data analysis?

Bonini: To some extent "data mining" is a buzz word. New terms are constantly coming out and get big play. Much of data mining is what was formerly referred to as regression analysis, experimental design, etc. But I think there are some new dimensions. For one thing, there are some new techniques have been developed such as classification trees. In addition, neural nets are being used to analyze data. Software for this is rela-



Wen-Bin "Vincent" Yu

is an assistant professor of information science and technology at the Department of Business and Information Technology, Missouri University of Science and Technology (formerly UMR). He earned his PhD in computer

science and engineering from the University of Louisville, his MS from Clemson University, and his BSc from National Cheng-Chi University, Taiwan. His research interests are in the fields of data/text mining, software agent applications, business process simulation, demand forecasting especially in a supply-chain environment and/or enterprise systems and social network applications. His work has been published in a number of academic conference proceedings and journals. He teaches classes in System Design & Analysis, Web Development, Business Intelligence, Strategic Enterprise Management System, and Information Retrieval and Analysis.

yuwen@mst.edu

tively recent. The other issue is simply that of the size of the data sets analyzed, with lots and lots of variables and data items. The software necessary for computing becomes an issue. And “statistical significance” is a lot less relevant. With a couple of million data items, everything will be “statistically significant.” Practical significance is another matter.

Yu: What do you enjoy doing these days?

Bonini: I really enjoy teaching at both the MBA and executive levels. I put a lot of time and effort into it. And I have coauthored a number of textbooks, of which I am proud. I now teach a course on data mining. As indicated above, much of that is relatively new, so I had to study the subject matter and develop the teaching notes. In the early days, I developed software programs to support coursework. For example, many years ago I coded a linear programming algorithm that my students used until better commercial alternatives became available. I also did some research, especially in the early years.

Yu: What has been the influence of the Decision Sciences Institute on your career?

Bonini: The Decision Sciences Institute was very important to my career. Through DSI I got to know leading academics in various universities. This enabled me to keep abreast of what was going on in the field. And, since I was a book author, I was able to get feedback and insights for revisions in my texts. I have made many very good friends at this Institute.

Yu: What factors or trends contributed to the development of Decision Sciences Institute?

Bonini: I see two factors having contributed to the Institute’s development. The first is that the whole area of decision analysis (decision making under uncertainty) was relatively new when the Institute was first formed. The existing professional societies were not giving this subject area much attention. But it was important and represented the central focus of Institute’s activities, especially in the context of how it was incorporated into the curriculum in business schools.

The second factor is related to the growth and improvement of business education in the U.S. About the time when the Institute was started, the academic side of business education was increasing in importance. Prior to this business education was considered largely a “trade school” type of education. But then business schools began to do significant research. And the Institute provided a very good forum for faculty to present their new research and collaborate with colleagues. The entire spectrum of quantitative techniques became a significant part of management education. This also extended to executive education in management.

Yu: How do you see Decision Sciences Institute evolving? How would you like it to evolve?

Bonini: DSI has become much broader in its focus. It is not simply about quantitative tools, but about decision analysis broadly defined. If one looks at the current national program, the sessions are about health care systems, about supply chains, about social responsibility, and so on. We have become an organization that allows our faculty colleagues to present their research on a great variety of topics. In many ways this is good and draws many faculty to the annual and regional meetings. But it does have a down side since attendance at these widely varied sessions tends to be sparse. I think the evolution of DSI is good. The whole field is evolving. The focus used to be on the methodology—the tools and techniques. I now see more emphasis on a wider variety of application areas.

Yu: What is the future likely to be for those who are just starting their academic career today?

Bonini: I think the future is “rosy” for folks just starting out. Management education has achieved good status in academia. The academic standards are high. There is good collegiality within the decision sciences field. It will take hard work, but success has its rewards, especially in terms of personal satisfaction.

Yu: I am a faculty member at the Missouri University of Science and Technology, which is known for its engineering programs. We

started a business school not very long ago. What advice do you have for interactions with engineering school faculty?

Bonini: I am not sure how the connection between engineering schools and business schools works in general. At Stanford University we have a good connection. One of my coauthors, Warren Hausman, is a professor in the Industrial Engineering Department (called Management Science and Engineering), and many of my business school colleagues have joint research with engineering school faculty. Also, we have courses that combine management and engineering perspective—new product development, for example.

Yu: How do you strike a balance between teaching and research?

Bonini: Keeping a good balance is important. Research is now much more valued than when I started teaching almost 50 years ago. One needs to do reasonable

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Professor Bonini

is William R. Timken Professor of Management Science Emeritus at Stanford University and is renowned for his work in decision analysis, optimization models, queuing and processing systems, simulation, and data mining. He has been associated with the Decision Sciences Institute for about four decades, and served as its president in 1977-78. He has been elected Fellow of the Institute and was awarded its Distinguished Service Award—now named after Dennis E. Grawoig—in 1989.

Professor Bonini received his undergraduate education at the College of the Holy Cross. He received his MS and PhD degrees at Carnegie Mellon University. In 1959 he joined the faculty at Stanford University. Over the ensuing years he has taught Decision Analysis, Modeling and Simulation, Management Information Systems, and Data Mining, in Stanford University’s MBA, Doctoral, and Sloan programs. He has authored or coauthored a number of text books on these subjects, including nine editions of Quantitative Analysis for Management.

Over the six-year period from 1987 to 1993 he served as associate dean of Stanford University’s Graduate School of Business and Director of its MBA Program. In 1999 he received the Robert T Davis award for extraordinary contributions to the School.

appropriately. Partnerships should be assigned 'champions' to ensure that the relationship is managed and maintained over time. Too often, relationships are started by enthusiastic individuals who then leave the organization, and the relationship is left to flounder. This in turn decreases the reputation of the university as the partnership dissolves, at best amicably and at worst acrimoniously. Relationship succession planning with international partners is very important. Keeping the relationship records up to date is equally important—knowing that you already divorced that partner for non-performance is very useful information for the next enthusiastic seeker of new horizons! Accepting that not all partnerships work in your best interests is also an important step in negotiating apposite relationships. However, you do need to develop criteria for assessment of relationships and performance indicators that are transparent to all. Once again, monitoring of performance is necessary.

A multiplicity of factors will need to be considered—each of these factors may be unique to the partner and the outcomes you seek.

Because enthusiastic individuals are required for internationalization to 'work,' mechanisms need to be established that enhance opportunities. For example, short-term staff exchanges, small research grants, rewarding international collaboration, and so on. Motivating the individual to contribute to the internationalization agenda is important to successful outcomes for the business school or university. Internationalization does not 'just happen.' Those universities with global reputations have 'invested' much time and effort, usually over many years, to get where they are today. It all starts with small steps, but you have to be very serious about which steps you take in which direction. ■

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research to be promoted and get tenured. So early in one's career, it probably should get first priority.

Concluding Remarks

It was a great honor for me to have an opportunity to interview with Professor Charles P. Bonini, a renowned scholar in the field of operations research. I particularly appreciated his comments on the development of decision analysis from a historical point of view, as well as its future potential. It is encouraging that the research on decision-sciences-related fields has been growing in a promising direction and the Institute continues to provide a vehicle for business faculty from a variety of areas to communicate and share their research. As a faculty member in an institution known for its engineering traditions, I am heartened by the potential for collaboration among engineering and business faculty. ■

Letter to the Editor

March 20, 2009

Thanks for publishing "Web-Based Instruction Improves Teaching" (*Decision Line*, Jan. 2009, pp. 4-6). Many of us have been following the web-based homework debate with interest, and I am grateful to Jay Heizer and Barry Render for providing an advanced copy of the article and a demo of the Prentice Hall Grade Assist (PHGA) for my adoption in 2008. That said, after one semester with PHGA, I reverted to writing and grading my own homework questions out of a concern that I was trading richness of student thinking for personal convenience. Despite the many advantages, I don't see a way to immerse students in an environment of open-ended homework and activities using a web-based system.

Why open-ended? There's a mathematics education literature spanning the

last 20 years on the value of open-ended questions in homework and assessment. Elizabeth Badger and Brenda Thomas wrote in 1992, "Open-ended questions are not multiple-choice questions without options. They are not questions that demand a single correct response. Nor are they questions where any response is acceptable. Rather, open-ended questions address the essential concepts, processes, and skills that go beyond the specifics of instruction to define a subject area. In general, they require complex thinking and yield multiple solutions" (Badger & Thomas, 1992).

Researchers found that open-ended problems encourage deeper student learning, instill more student confidence, and give more conceptual (less mechanical, procedural) understanding that is more readily applied in unfamiliar situations. Much of this research applies to quantitative college subjects, like Operations Management.

When the benefits of web-based homework are measured by exam performance—that is, a metric based on similar "closed" questions—it is not surprising that automating the practice of such problems results in improvement. The question is this: how deeply do the students retain the material, say, five years from now? It's an open question.

I invite anyone interested in this literature (and examples of open-ended questions) to browse a survey essay at

<http://blsciblogs.baruch.cuny.edu/millhiser/teaching>.

Will Millhiser, Department of Management, Baruch College, New York City

Reference

Badger, E., & Thomas, B. (1992). Open-ended questions in reading. *Practical Assessment, Research and Evaluation*, 3(4), <http://pareonline.net> ■