

POMS

CHRONICLE

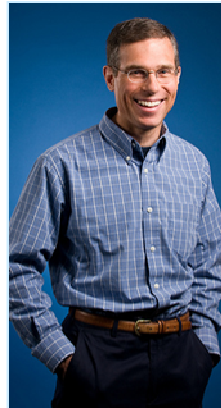
SECOND ISSUE 2009

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**Upcoming Conferences**

**Twenty-first Annual Conference of POMS**  
May 7-10, 2010, Vancouver, BC Canada  
See <http://poms.org/>



**Wally Hopp**  
*POMS President*  
Ross School of Business  
University of Michigan

**A New Vision of Creative Destruction**

I live in Michigan. It’s a lovely state, but, as you probably know, times are tough here. While the rest of the country is agonizing over 10% unemployment, Michigan’s rate is 15%. In the city of Detroit, it is 27%, or, if you include underemployment of part time workers who want to be full time, 44%. Worse, projec-

tions are that it will take years to resolve the situation posed by displaced auto workers and return to “normal” employment.

As I read the litany of layoff announcements in the newspaper, I thank my lucky stars (and the professors who educated me) that I am able to work at a stable job in a field I love. At the same time, each story of an individual struggling with unemployment makes me wonder how he/she must view my profession. To people whose jobs have disappeared in “downsizing” or “reorganization” events, OM must seem sinister indeed. We talk about “efficiency improvements that led to productivity increases” and they hear “my job was automated”. We proudly note that “increased supply chain efficiency led to improved financial performance” and they hear “my job was off-shored”.

I know, of course, that my imaginary judgments of OM are an oversimplification. No rational person could argue that we should retain jobs by remaining inefficient. Indeed, improvements in operational efficiency have undoubtedly saved many more jobs than they have eliminated, by keeping firms competitive and in business. Moreover, losing jobs is the natural consequence of Schumpeterian creative destruction, which is an essential part of an evolving free-market economy. This all makes macroeconomic sense. But here in Michigan, it feels a lot more destructive than creative.

So I wonder whether we as a community should be doing more to take responsibility for the human aspects of operational efficiency. Are we being too narrow when we view, for purposes of research, a firm strictly as a shareholder money machine, rather than as a broader institution that provides livelihoods and dignity to employees and structure and support to communities? Could our field actually help mitigate, rather than aggravate, the social upheaval wrought by economic evolution?

I think the answer is yes. I also think that the POMS College structure is pointing us in the right directions to think about the employment problem. I offer below three areas in which the connection between operations management and individual employment is

*(Continued on page 5)*

## EDITORIAL TEAM

**Editor: Glen Schmidt** University of Utah, Phone: 801-585-3160. (glen.schmidt@business.utah.edu).

*Associate & Feature Editors*

**Blanco, Edgar E.**, MIT, eblanco@mit.edu: **POMS Chapter rep for Latin America Caribbean.**

**Claes, Björn**, Cranfield School of Mgt, bjorn.claes@cranfield.ac.uk: **POMS College of Human Behavior in Op's Mgt.**

**Davies, Jane**, Cambridge, England, jd512@hermes.cam.ac.uk: **POMS College of Product Innovation & Technology Mgt.**

**Denizel, Meltem**, Sabanci University, Turkey, denizel@sabanciuniv.edu: **POMS conferences.**

**Faull, Norman**, University of Cape Town, South Africa, nfaull@gsb.uct.oc.za: **Chapter representative for Africa.**

**Heese, Hans Sebastian**, Indiana University, hheese@indiana.edu: **representative for contributed articles.**

**Kucukyazici, Beste**, McGill U, Canada, beste.kucukyazici@mail.mcgill.ca: **POMS College of Healthcare Op's Mgt.**

**Machuca, Jose**: University of Seville, Spain, jmachuca@cica.es: **Chapter representative for Europe.**

**Menda, Rafael**: Johnson & Johnson Group of Consumer Co's., rmenda@gmail.com: **Industry Practice-related columns.**

**Van der Rhee, Bo**, Nyenrode University, Netherlands, b.vdrhee@nyenrode.nl: **POMS awards.**

**Rosenzweig, Eve**, Emory University, eve\_rosenzweig@bus.emory.edu: **Interviews.**

**Shah, Rachna**, University of Minnesota, rshah@csom.umn.edu: **Interviews.**

**Swartz, Stephen M.**, University of North Texas, swartzs@unt.edu: **POMS College of Supply Chain Management.**

**Toyasaki, Fuminori**, York University, toyasaki@yorku.ca: **POMS College of Sustainable Operations.**

**Voss, Chris**, London Business School, cvoss@london.edu: **POMS College of Service Operations**

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**Xiaosong (David) Peng**, Texas A&M, xpeng@mays.tamu.edu: **Representative for POM Journal.**

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**Dr. Sushil K. Gupta**, Executive Director-POMS

Florida International University  
11200 Southwest, 8th St., Miami, FL 33199, USA  
305-348-1413 poms@fiu.edu  
www.poms.org

**POMS Membership Information:**

Chelliah Sriskandarajah, poms@utdallas.edu  
The University of Texas at Dallas, Dallas, TX, USA

**POMS Job Placement Information:**

Metin Cakanyildirim, metin@utdallas.edu  
The University of Texas at Dallas, Dallas, TX, USA

**POMS Webpage Editor**

Kaushik Dutta, kaushik.dutta@fiu.edu  
Florida International University, Miami, FL, USA

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**Featured Associate Editor**

**Eve D. Rosenzweig**

Goizueta Business School, Emory University

On page 13 of this issue, you will find an in-depth discussion between Eve and three prominent researchers in OM; Aleda Roth, M. Johnny Rungtusanatham and Chris Voss. Thank you, Eve!

**Brief Bio of Professor Rosenzweig:** Eve's research examines the influence of strategic operations-based choices on capabilities and business performance, and the enabling role of technology in supply chain strategy. She is a Senior Editor for *POM* and an Associate Editor for *JOM*.

Her research has led to several high-profile awards, including the 2004 *Stan Hardy Award* given annually to highlight the best academic paper in OM. Her research has also been supported by the Supply Chain Council, presented to senior executive members of the Conference Board, and featured in *ZdNet Tech Update*, *The Economist*, and on *MSNBC.com*.

**Submit articles, news, announcements, and other information of interest to the editor:**

**Glen Schmidt**

glen.schmidt@business.utah.edu

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POMS Chronicle are available at: [www.poms.org](http://www.poms.org)*

# FROM THE EDITOR: PEOPLE, PROFICIENCY, PROFITS, AND PROTECTING THE ENVIRONMENT



**Glen Schmidt**  
 David Eccles School of Business, U. of Utah  
 glen.schmidt@business.utah.edu

### Can We Help Industry Balance These 4 Ps?

Which industry seems to have been amazingly proficient at enhancing the value that it has offered to customers over the past decades, but has itself struggled to make money?

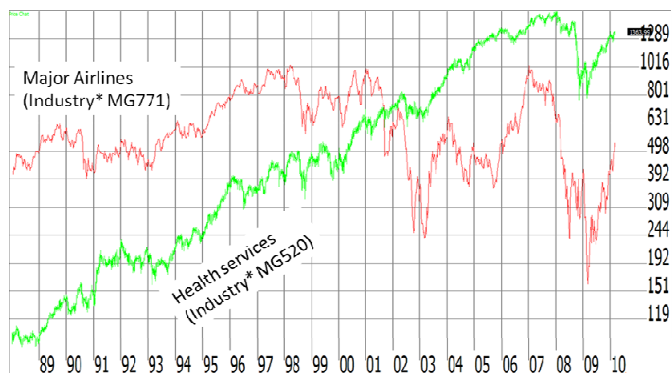
Which industry has conversely been quite profitable over the past decades, but has seemingly not been as proficient at keeping costs in check?

Which industry (or firm) has been both proficient and profitable, but has come under fire for the way it has treated its people (workers) and the environment?

As President Hopp notes in his address on page 1 of this issue, current times call for a new vision of creative destruction. From a societal perspective—and accordingly from a long-term profitability perspective—it is not enough to focus on profits to the exclusion of people. This is evidenced by the unemployment situation President Hopp mentions, and further evidenced by the backlash that firms have experienced when carrying out employment practices that are perceived to be questionable (see further discussion below regarding Wal-Mart, and also see Rafael Mendez’s “Practice” article in this issue of the Chronicle). And as evidenced by the runaway costs that we are experiencing with healthcare, the combination of profits plus people is not enough either—a prolonged satisfactory outcome must also consider the cost proficiency with which the product is offered. All three (people, proficiency, and profits) are needed if a firm or industry is to achieve prolonged success—and to boot, let’s not forget that prolonged success also hinges on another “P,” protecting the environment.

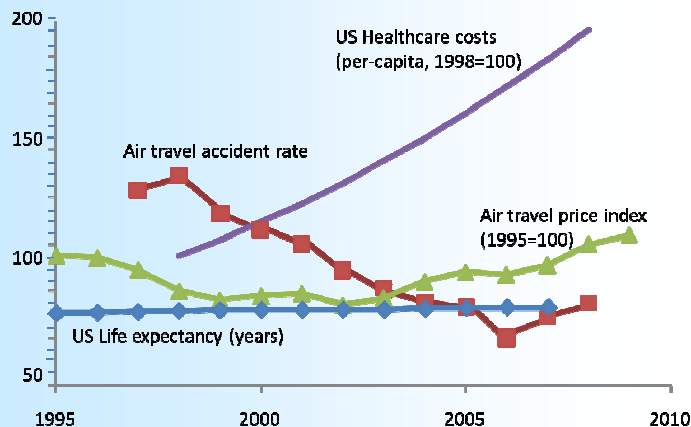
To answer the first two questions posed earlier in the introduction above, the industry that seems to have been amazingly proficient at enhancing value to customers but has failed to turn a prolonged profit is—you guessed it—the airline industry. The industry that conversely has been quite profitable but has

### Stock Prices for Health Services vs. Major Airlines



\* Hemscoff industry groups, stock charts made using TeleChart

### Air travel versus Healthcare



been less proficient at keeping costs in check is of course healthcare. For some time now I’ve thought it might be an interesting exercise to compare these two industries along multiple dimensions, so I did a bit of a search and found the following data.

First, consider profitability. As shown in the graph of stock prices at the lower left, in the aggregate the stocks of the major airlines are currently about where they started two decades ago while the healthcare industry has experienced more than a ten-fold rise in stock appreciation (see End-note 1). In terms of profits, the airlines get an “F,” while healthcare gets an “A.”

Next let’s compare and contrast the cost proficiency of these two industries over the past decades (see End-note 2). As shown in the Exhibit at the top of this column, U.S. healthcare costs have risen at a rate of about 7% per year per person over the past decade (1998-2008), while the cost of air travel has remained relatively constant. In fact, when adjusted for inflation, air travel costs seem to have come down significantly from what they were several decades ago. In terms of cost proficiency, I would give the airlines an “A,” while healthcare has seemingly failed us. For a humorous but revealing contrast of the airlines and healthcare industries, see the article “If Air Travel Worked Like Health-Care,” referenced in End-note 3.

The third comparison is related to another element of proficiency—product quality (see End-note 4). Continuing to refer to the graph above, the accident rate for air travel has had a strong downward trend over the past decade, with the current global rate being about one-half of what it was only a decade ago. Say what you want about lost baggage, or about airline food (or the lack of it), but in my book, the dramatic cut in the accident rate over-rides these other “nuisances,” such that I would give the airlines a high mark. Similarly, one can make an argument for giving a good mark to the quality of healthcare—while it is hard to see in the above graph, U.S. life expectancy has increased from about 70 years in 1960 to roughly 75 years in 1990 to the current 78 years.

(Continued on page 4)

## FROM THE EDITOR (CONT.)

(Continued from page 3)

Of course, if you were reviewing this article for a peer-reviewed Journal, you would challenge some of the data and ask me to fine-tune some of the comparisons (for example, I'd want to account for the ageing population, and for the impact of Regional carriers on the major airlines).

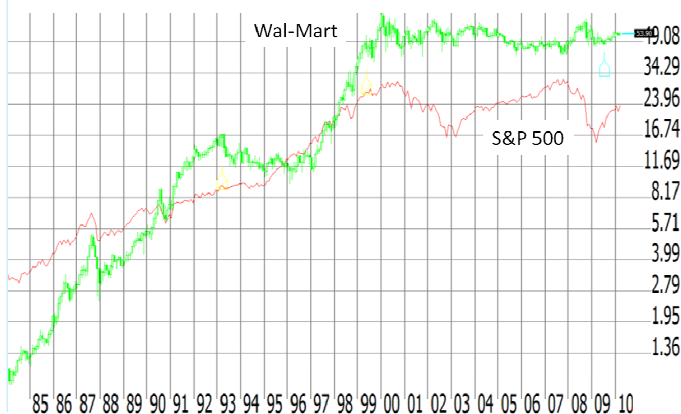
However, the implication remains—what is interesting to me is that while the airline industry has (per my perception) extensively used OM principles, the benefits seem to have largely accrued to consumers. In contrast, while more recently there has been a concerted push to use OM principles in the healthcare industry, the use of OM in healthcare seems to have historically been less prominent. (As an anecdotal example, note that American and United Airlines have both won the INFORMS prize in the 1990s while to my knowledge no healthcare firm has done so.) But in spite of this, the healthcare industry has profited handsomely.

My take-away from all this is that we have more “integration” work left to do to help firms “find the right balance.” Another example of a possible imbalance is the performance of Wal-Mart. From a “proficiency” perspective it has performed admirably, and this has contributed to its stock performance as shown in the graph below. However, its performance along the “people” dimension seemingly opened it up to public backlash (see End-note 5), and Wal-Mart seems to be working hard to repair its image (repairing an image is not an easy thing to do, as both Toyota and Tiger Woods can probably testify).

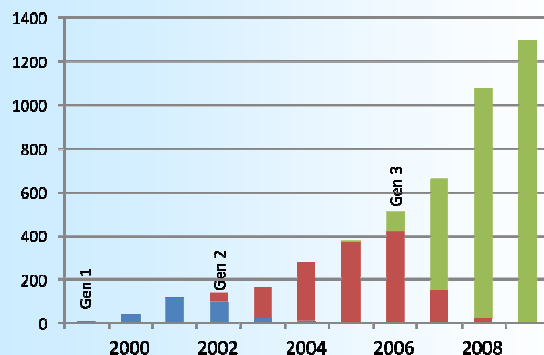
Which brings us to the final “P,” that of protecting the environment. To its credit, one of the things Wal-Mart is actively pursuing in this balancing act is its management of suppliers along the dimension of sustainability. And Wal-Mart is not the only firm concerned with protecting the environment—two prominent (but voluntary) initiatives that are helping engage firms along this dimension are the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (CDP)—see End-note 6. As shown in the graphs at the upper right, the number of firms voluntarily participating is growing quite dramatically.

Regarding Wal-Mart's efforts, in 2009 Wal-Mart scored 4th from the top in the CDP scoring. But are its efforts (and those of other firms) enough? Note that carbon dioxide emissions

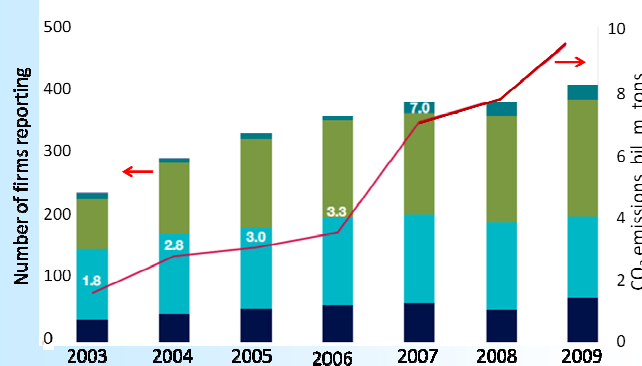
### Wal-Mart Stock Outperformed S&P-500



Firms participating in the Global Reporting Initiative



Firms (out of the top 500) participating in Carbon Disclosure Project



continue to grow (see graph just above here)—as MIT Professor Sterman's “bathtub analogy” suggests (see End-note 7), we need to be reducing emissions rather than growing them. Have we adequately helped firms find the right balance?

Marketing has the 4 Ps of product, price, promotion, and place. In a similar vein, the discussion above suggests that from an operations perspective, we might help firms balance the 4 Ps of people, proficiency, profits, and protecting the environment—only through proper balancing of these will the firm, its industry, and society at large experience prolonged success.

#### End Notes:

1. The Hemscott industry group 520 includes MG521, Medical Inst and Supplies, MG522, Medical Appliances and Equipment, MG523, Healthcare Plans, MG524, Long-term care facilities, MG525, Hospitals, MG526, Medical Labs and Research, MG527, Home Health Care, MG528, Medical Practitioners, and MG529, Specialized Health Services.
2. The air travel price index is published by the Bureau of Transportation Statistics: <http://www.bts.gov/xml/atpi/src/datadisp.xml?t=1>. Data on healthcare costs are from the Kaiser Family Foundation, [http://www.kff.org/pullingittogether/O21610\\_altman.cfm](http://www.kff.org/pullingittogether/O21610_altman.cfm)
3. “If Air Travel Worked Like Health Care,” *National Journal Magazine*, 9-26-09, [http://www.nationaljournal.com/njmagazine/st\\_20090926\\_4826.php](http://www.nationaljournal.com/njmagazine/st_20090926_4826.php)
4. Air travel safety data are from the International Air Transport Association, plotted as hull losses per 100 million flights of

(Continued on page 20)

## PRESIDENT'S MESSAGE (CONT.)

(Continued from page 1)

front and center. Each of these aligns directly with one of our colleges, and all of them overlap with the interests of the College of Human Behavior in Operations Management.

**Evolution of the Healthcare Industry:** Health care will eventually go through a restructuring like the one manufacturing has been experiencing for the past half century, during which employment was eroded by both productivity gains and globalization. Health care productivity will improve as better technology and processes enable care givers to devote more time to patient care instead of non-value-added activities like paperwork, walking and searching for materials and information. Health care globalization will occur as telemedicine and other technologies make it possible to perform aspects of care at a distance from patients. While demand growth may offset these pressures in the near term, there is a limit to the amount of health care we need or can afford. So someday employment in health care will decline due to both downsizing and off-shoring.

A challenge for the OM community, and the Healthcare Operations Management College in particular, will be to anticipate and address the resulting worker displacement better than we did for manufacturing. One way this might be done is by designing work systems and career paths that cultivate workers that are less vulnerable to industry shifts. In *The World is Flat*, Thomas Friedman argues that workers can protect themselves from the economic displacement of globalization by being specialized (having skills in short supply), being anchored (performing functions that require direct contact with customers), or being flexible (continually acquiring new skills that make them valuable in a changing economy). By thinking holistically about how to enhance health care efficiency, perhaps we can help develop a workforce that is both more effective now and more resilient in the future.

**Sustainability and Localization:** Our era of low energy prices and externalized environmental costs has almost certainly led to more globalization than is socially optimal. Producing parts in whatever corner of the globe offers the lowest labor cost only made sense while sustainability could be ignored. But in the not-too-distant future, rising energy prices and environmental considerations will favor more local production of physical products. Challenges for the OM research community, and the Sustainable Operations College in particular, are to find practical ways to internalize environmental costs, to combine uncertain energy costs with other sourcing risks, to evaluate the employment consequences of economically justified localization strategies, and ultimately to design global supply chains that truly are optimal for the globe.

**Innovation Operations:** Policies that mitigate the impacts of automation and off-shoring address the “destruction” portion of “creative destruction”. But in the long haul, the only reliable source of employment is the “creative” part. This means innovation, and lots of it. While job losses in mature industries (steel, auto, and someday health care) often occur in batches of thousands, jobs in new startups are added one or two at a time. So we need better methods for identifying new opportunities and transforming these into new businesses, and we need to get these into the hands of the thousands of small scale entrepre-

neurs we are counting on to create the jobs of the future.

A key challenge for the OM community, and the Product Innovation and Technology Management College in particular, is to enhance our understanding of the core processes inherent in new product development. Because these involve creativity, collaboration, knowledge-based work and other complex activities, the needed research will be broader and more interdisciplinary than anything our field has undertaken so far. Such research must also be closely linked to teaching, to ensure that insights wind up in the heads of entrepreneurs, rather than relegated to research journals. While this is a daunting undertaking, there is hope because the success rate of startup ventures is so low that even modest improvements in efficacy could have an enormous effect on firms and the people who work for them.

By turning our talents to issues like these, I believe we in POMS can help bring about a new vision of creative destruction, one in which jobs are destroyed but not people. If so, we can relegate widespread hardship events like the one we are enduring in Michigan to the dustbin of history.

**Wally Hopp, POMS President**

(Continued from page 6)

the rather scientific way in which we have conducted the analysis and of the validity of our conclusions.

Naturally the methodologies for such manufacturing plant viability assessments don't fully resemble those used in Taylor's or Mayo's studies, however they are still based on specific measurements taken at specific (hopefully representative) times and circumstances in order to compare the performance of two or more plants. How much true science did go into ensuring the validity of those methods? Are we making decisions that affect people's careers and lives based on anecdotal evidence we may have been seeing in the books written by modern day consultants? The questions abound, but let's also be realistic: we as practitioners cannot let ourselves be paralyzed into inaction by these questions and avoid making timely decisions.

So allow me to boil down my thoughts to these two conclusions:

- Industry practitioners are hungry for tools and techniques that are based on sound management theory rather than one-size-fits-all methods conveniently lifted-off business publications written by consultants set out to sell a “product.” The POM academic community is in the best position to act as the objective arbiter and save practitioners from a repeat of another Taylor-like episode.
- Contrary to conventional thinking, POM practitioners' lot-in-life is not only about optimizing costs, maximizing customer service, or improving firms' competitiveness. It also involves decisions that may have lifelong impact on many of their employees' lives. We better be making those decisions using documented, verifiable methods—those that are based on sound scientific principles rather than often embellished anecdotes. Otherwise we may not be able to sleep well at night.

**References:** Stewart, M. (2009), *The Management Myth: Why The Experts Keep Getting It Wrong*, W. W. Norton & Company, NY

## SCIENTIFIC MANAGEMENT: REALLY?



**PRACTICE COLUMN —  
Scientific Management: Really?**

**Rafael Menda**

POMS, Vice President-Industry

Johnson & Johnson Group of Consumer Companies

[rmenda@gmail.com](mailto:rmenda@gmail.com)

Two of the things I did during this holiday period were quite mundane and on the face of it unrelated: I read a book and went to see a movie. I know, it doesn't sound exciting but what I observed in those two events somehow made me pause and think about the validity of what we have always thought be the fundamentals of Operations Management (and management overall), and the human side of the practice of OM. The points those two events highlighted for me and their potential consequences compelled me to want to share them with POMS members, with the hope that it may lead to some introspection and debate.

**The Book:** The title of the book I read was "The Management Myth: Why the Experts Keep Getting It Wrong" written by Matthew Stewart. On the surface the book is a personal account of a former management consultant (with a degree in philosophy and no prior business experience, let alone an MBA) who sets out to reveal the tricks of the consultant trade. However the book is more than just an entertaining narrative of personal anecdotes, though it does a good job of that. Interspersed with his own experiences during his years as a consultant are what I would call stinging criticisms of the work by the founders of modern management theory. What struck me the most was his scathing critique of "the father of scientific management" Frederic W. Taylor's work and the methodology he used in his renowned studies at Bethlehem Steel in the first few years of the 20<sup>th</sup> century.

It is not my intention to recount all of Stewart's claims here, nor do I intend to support or dispute his conclusions, partly because I have not read Taylor's at-the-time groundbreaking book "The Principles Of Scientific Management," in which his Bethlehem Steel experiences are outlined. However, reading Stewart's book I have come to reasonably conclude that we may have been duped. As is widely known, at the core of Taylor's work in early 1900s was the basic question "How many tons of pig-iron bars can a laborer load onto a wagon in the course of a working day?" The methodology he claimed he used in order to arrive at the answer (47½ tons) has formed the basis of future work measurement techniques widely used in the industry (although Taylor did not provide further details on the method in his publications). Based on Stewart's assertions, not only the way in which Taylor arrived at the final number, but also the way the "average workman" was selected for observations was unscientific. I will let those of you who have not yet read the book and are curious about the entire story to get a copy and arrive at your own conclusions. I will, however, reference a couple of passages here to give you a flavor of Stewart's assertions.

*"It was not just Taylor's method of calculation but his very approach to the problem that was deeply unscientific. A crucial feature of any activity that aspires to the name of science is verifiability: independent observers must be able to reproduce experiments and thereby confirm results. This is why journals are such an integral feature of scientific disciplines. In his pig-iron escapades, however, Taylor never supplied the data or the methods that would have allowed others to reproduce and verify his results."*

*"Taylor's greatest gift was for generalization, and his grandest generalization was the leap from his particular experiences as a consultant in the yards of Bethlehem to the idea of a universal science of management. What was true for pig-iron handling, he announced, was true for all management."*

Needless to say, as all of you would agree, these kinds of generalizations cannot be made based on very limited observations, especially if the design of those experiments did not adhere to basic scientific principles. Yet many of my practitioner colleagues believe (or at least state with a straight face) that, for example, if "lean" techniques work for Toyota, then they must work for all companies. So I couldn't help it but start wondering how many other well-accepted management theories or widely used techniques may fail to withstand a rigorous reexamination based on truly scientific criteria (e.g., verifiability, repeatability). Could it be that Taylor (and Elton Mayo, with his Hawthorne studies, as Stewart also critiques in his book) was able to get away with it because it was the early 1900s? Could the same thing happen today? How about the plethora of books written by present day consultants?

**The Movie:** With the advertised genres of comedy drama and workplace comedy, the movie "Up In The Air" portrays Mr. Ryan Bingham, played by George Clooney, as a seasoned "corporate downsizing expert" whose specialty is to deliver, face-to-face, the layoff communications to affected employees of his clients. Initially Mr. Bingham comes across as an emotionless, hardened corporate type who is there to "do the job." However he also takes pride in his professionalism, while sympathizing with the real human beings across the table from him when they are devastated by the news that their "jobs are no longer available." The movie undoubtedly hits a nerve during these troubling economic times. The reactions of the laid-off employees in the movie (disbelief, anger, resentment) sound all too real to most viewers.

**The Dilemma:** Why are these points relevant and how are the consequences of these two events related? One of my primary responsibilities, as the Director of Global Supply Strategy for the Consumer division of my company, is to periodically assess the viability of each of our over thirty manufacturing plants around the world. This assessment includes classification of all sites as "strategic," "tactical," "in transition," or "consolidation candidate." Those in the final category are subjected to rigorous operational and financial evaluations, following which a recommendation is made to either close the site or otherwise restructure it to redefine its mission in the supply network. Although we are always mindful of the fact that hundreds of employees' lives may be adversely affected as a result of our analysis, we too take pride in our objectivity and trust the methodologies we employ in carrying out the assessments. And once we arrive at a conclusion our task it to "sell" it up the corporate chain for final approvals and implementation. That selling process, as the term implies, is no longer an exercise in objectivity but an effort to convince others of

(Continued on page 5)

## HUMANITARIAN LOGISTICS



### Humanitarian Logistics

**Paulo Goncalves**

University of Lugano, Lugano, Switzerland

[paulo.goncalves@lu.unisi.ch](mailto:paulo.goncalves@lu.unisi.ch)

In recent years, humanitarian logistics has gained increased visibility in operations management. A number of annual conferences (e.g., POMS, INFORMS, EUROMA) hosted either a track or invited sessions on humanitarian logistics, humanitarian operations, emergency response or some variation of the theme. In his plenary talk at INFORMS 2009, Hau Lee devoted a significant amount of time discussing current humanitarian research dealing with warehouse prepositioning, demand estimation and fleet management. At the 2009 Mini-Conference of the POMS College of Sustainable Operations, Luk Van Wassenhove illustrated the importance of humanitarian logistics research with examples from his work at INSEAD and discussed the need for more training to humanitarian logistics professionals. In addition, a number of journals (e.g., *Interfaces*, *Supply Chain Forum*, *Operations Research Spectrum*, among others) have hosted or are hosting special issues in humanitarian logistics. In particular, the "*Interfaces*" special issue on "Humanitarian Applications: Doing Good with Good OR" edited by Ozlem Ergun, Pinar Keskinocak and Julie Swann, from Georgia Tech, highlights how OM models can have a real impact in the way organizations run their operations.

This surge in attention is attracting novel and interesting research. At the same time, humanitarian relief operations is not new. In fact, the modern roots of international humanitarianism can be traced back to the formation of the Red Cross in 1863. Henry Dunant lay the foundations of the Red Cross movement, after witnessing the suffering of thousands of wounded soldiers left untended in the battle of Solferino, with an appeal to action: "Would it not be possible, in time of peace and quiet, to form relief societies for the purpose of having care given to the wounded in wartime by zealous, devoted and thoroughly qualified volunteers?" (1986, p. 27). Humanitarian relief operations, however, achieved significant scale with the establishment of the United Nations Refugee Relief Administration (UNRRA) charged with resettling millions of refugees and homeless displaced during the Second World War. In operations research and operations management, academics have been proposing models for improved relief operations, improved response to disease outbreaks and emergencies, etc. for almost two decades (some of the works include Batta and Mannur 1990; Sherali et al. 1991; Long and Wood 1995; Haghani and Oh 1996; Pidd, de Silva, Eglese 1996; Wu, Wein, and Perelson 2005; Larson 2007). In addition, Luk Van Wassenhove and his research group at INSEAD have been writing cases on humanitarian operations since the early 2000's. However, until recently, this work has received little attention from mainstream academic research.

The term "humanitarian logistics", seems to have gained currency both in academia and in practice after the 2004 Indian Ocean Tsunami. The impact of the Tsunami was so devastating – claiming the lives of over 200,000 people and leaving millions homeless – and the media scrutiny so intense – highlighting the problems in the relief operations – that there were worldwide outcries for improved logistics in humanitarian relief operations. For instance, one spokesman for Doctors Without Borders suggested that "what is needed are supply-managers without borders: people to sort goods,

identify priorities, track deliveries, and direct the traffic of a relief effort in full gear." (Russell 2005, citing *The Economist Global Agenda* on January 5 2005). Shortly after, hurricane Katrina devastated New Orleans. Mary Landrieu, a Louisiana senator, described it bluntly: "What I saw today is equivalent to what I saw flying over the tsunami in Indonesia. There are places that are no longer there." (*The Economist* 2005a). Despite the limited number of deaths compared to the Tsunami, the United States faced its "worst natural disaster in living memory" and authorities learned a lesson in inadequate emergency preparedness (*The Economist* 2005b).

In February 2005, delivering the Blackett Memorial Lecture (of the OR Society), Luk Van Wassehove seized the opportunity and made a strong case for the need of supply chain management to improve operational efficiency and transparency in humanitarian operations (Van Wassehove 2006). Operational efficiency and effectiveness are critical since several humanitarian organizations are already resource constrained and are unable to scale up to ever-increasing needs. The pressure on humanitarian organizations is likely to increase since forecasts estimate a five-fold increase in the impact of natural and man-made disasters in the next 50 years (Thomas and Kopczak 2005).

On one hand, such trends suggest that research aimed at improving humanitarian operations will continue to be relevant. On another, humanitarian organizations face a current and pressing problem of improving the effectiveness of their operations. Donald Chaikin, head of logistics at Oxfam GB, suggests that: "[a]gencies need **logisticians with management experience**. Field logisticians are relatively easy to find but there is only a small pool of management level logisticians" (bold in original, Chaikin 2003). The humanitarian profession rewards field experience. Many successful humanitarian careers were built by individuals that rose through the ranks, learning-by-doing through trial-and-error. However, learning with *ad hoc* experiences often leads to knowledge gaps and informal sometimes ineffective processes. Lars Gustavsson, Director of Emergency Response and Disaster Mitigation at World Vision International, emphasizes these shortcomings: "Logisticians in the field are often not trained professionals but have developed their skills on the job. Competency-based capacity-building initiatives and mechanisms need to be developed and supported so that humanitarian logisticians' skills and know-how are raised to more professional levels"... (Gustavsson 2003).

To help address such challenges, the University of Lugano, Switzerland, received a donation in 2005 to create a tenured chair in operations management emphasizing research on humanitarian logistics. In preparation for this task and with significant support from Charlie Fine, from MIT, the university ran for three years (from 2006 to 2008) a week long humanitarian summer school. In January 2009, the university launched a part-time executive master program on "Humanitarian Logistics and Management" aimed at training humanitarian practitioners. The program

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## SYMPOSIUM: ENGINEERING TO IMPROVE THE OPERATIONS OF MANUFACTURING ENTERPRISES

A National Symposium and National Academy of Engineering Regional Meeting:

### Engineering to Improve the Operations of Manufacturing Enterprises

University of Michigan, Ann Arbor, MI — May 13, 2010

Manufacturing a wide range of products remains vital to the US economy, but many challenges exist for US manufacturers in the global marketplace. This Symposium will convene more than 30 distinguished authorities from government, industry and academia as speakers and panelists to address these challenges. The Symposium will focus on using and improving modeling and simulation methods to ensure that operations within an enterprise:

- produce products of high value & adapt readily to market shifts;
- meet occupational health and emerging environmental and sustainability requirements; and
- develop mfg. technologies to maintain our national security.

**Who Should Attend:** The Symposium will be of interest to a wide range of engineers, business leaders and others striving to ensure that manufacturing operations meet consumer needs, are profitable and sustainable, and remain an integral part of the US economy and the US contribution to the global economy.

Registration is required to attend. See [www.eiome.org](http://www.eiome.org)

#### Keynote Presentations



“Engineering’s Grandest Challenge— Keeping our Manufacturing Systems Capable of Competing in the Global Marketplace”

**Charles Vest, President, NAE**

“The Role of Operations Engineering in Strategic Planning of Manufacturing for Products to Meet Changing Consumer Demands”



**Sharon Nunes**

VP Big Green Innovations, IBM

“Operations Engineering in the Acquisition, Manufacturing, and Maintenance of National Security and Defense Systems”

**Larry Burns, Former VP, GM**

“21st Century Manufacturing—One Tenth of the Way Towards Sustainable Manufacturing”



**General David M. Maddox**

National engineering leaders will conduct a panel discussion following each keynote presentation. In addition, a National Science Foundation Workshop Panel convened to address these issues will present its preliminary recommendations.

For Symposium details and to register, visit: [www.eiome.org](http://www.eiome.org)

**Sponsors and Participating Organizations:** Nat. Academy of Engrg, National Science Foundation, UM College of Engrg, Chrysler, GM Inc., Chicago Trading Co., John Deere, Tauber Institute, UM Center for Occupational Health and Safety Engrg., INFORMS, Inst. of In-

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aims at providing the conceptual and methodological foundations necessary to reconcile headquarter strategies with programmatic management and field logistics in humanitarian operations. It also seeks to balance theory and practice, avoiding the pitfalls associated with important knowledge gaps and informal training, while seeking purposeful knowledge with practical applications through collaboration with humanitarian organizations. In particular, students work on applied theses, addressing a real problem in their organizations.

In its first year, the program attracted 18 students with significant field experience (on average 9 years) from diverse humanitarian organizations (such as UNHCR, WFP, IFRC, MSF, WVI, Tearfund). Students praise the program as helping them to operate with a “more systematic approach ... to emergency logistics” allowing them to replace *ad hoc* procedures; as having increased their “capacity to grasp and deal with challenges and critical issues”; as providing an “opportunity to combine the academic thought with the field experience and apply the new knowledge” in their work. The second cohort of will have 27 students with more diverse backgrounds, from a broader set of organizations and even more experience than the first. At the same time, with 27 students the program has reached its maximum capacity. As a member of our advisory board suggested “I applaud your effort, but we need to train 10 times more people per year, and we need to train them in Indonesia.” Training programs designed to meet humanitarian organizations’ requirements are highly desired and badly needed.

In summary, a number of members of our POM community are working toward improving humanitarian logistics. A number of efforts are having a real impact. Still, more work is needed. Given the existing needs, it is likely that the work will continue to have an impact and be well received by humanitarian organizations.

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## LEARNING FROM THE HEALTHCARE DEBATE



### Learning from the Healthcare Debate: Need for Multidimensional Scoping of OM Research Problems

Vikram Tiwari  
University of Houston

*You can observe a lot by just watching!*  
Quote attributed to Yogi Berra

Research ideas and singular revelations often come to us Operations Management researchers at the unlikely of places, and in fact often while trying to specifically get away from research (vacationing, driving, grocery shopping, etc.)! So, it was no surprise to me that I would end up utilizing the healthcare reform debate that would ensue among the people gathered at that evening's social get together to embark on some heavy *Operations Management soul-searching*. Even as I had my ears tuned to the discussion, my mind remained somewhere else – trying to relate the discussion to some of the dilemmas I was facing with my healthcare operations management research projects.

As I had walked into the gathering that evening, I could sense that the discussion had already gotten intense and was sounding like - "I know what ails the U.S. healthcare system and how to fix it, because from my personal experience I know that....." The gracious hosts were reluctantly playing the role of moderators, trying to make sure that the more "knowledgeable" in the group did not hijack the discussion. It appeared that peoples' perception of issues was based on, and limited to, their personal experiences with the healthcare system. As I sat there listening intently, each argument and the purported solution seemed to have merit in isolation, however, I began thinking if either of the solutions, which were so vigorously being defended by their proponent, could capture all possible dimensions of the problem so as to be in a position to make any substantive overall impact.

As an example, most people gathered there agreed that the incessant rise in insurance premiums each year was an issue that needed to be fixed. However, they could not even begin to agree as to what the causes for this were, far less agree on any possible solution. The school teacher was saying, "I know that the main cause is a lack of competition", and therefore opined that "the public-option is the best solution; with the government in the fray there will be more competition in the insurance industry and this will cause the private insurers to reduce premium hikes each year. Government's role is therefore critical". "But", the engineer had countered, "since the government has no reason to work like a corporation, they may put the insurance premiums arbitrarily low, this will completely wipe out the private insurance industry, as companies will likely find it more cost-efficient to pay a penalty for not offering the private insurance option to employees and would therefore push their employees to seek insurance from the government". "Both valid points", the physician had said pitching in, "however, the basic reason for the rise in insurance premiums is not lack of competition, but an increased consumption of healthcare; further, the fear of being sued by medical malpractice trial lawyers is causing us physicians to practice defensive medicine, that is,

play safe, and order an even greater number of diagnostic tests. This drives up consumption and hence the rising insurance premiums. Therefore, what we really need is giving control back to the primary care physicians over their patients; the physician knows best how to take care of his/her patients. We don't need some bureaucratic executive dictating us how to treat patients, this is inevitable with greater governmental control of the healthcare business"!

As I had sat there silently listening, two thoughts had crossed my mind. I remember wondering whether the arguments that each individual is presenting is likely only correct when seen through the narrow prism that defines their perspective of the issue. The solution that each individual is pushing for might be reasonable if the problem scope was restricted to only the parameters within which the individual is visualizing the issue. Another thought that was bothering me was, what, if any, are the Operations Management (OM) related themes in this discussion and in the healthcare reform debate in general? One could readily identify economic policy, marketing, finance and general management areas in the debate, but where is OM? Getting perturbed by the thought of OM being marginalized, my defensive mechanism had kicked-in and I had immediately started getting contradicting thoughts – in fact OM is everywhere, I quickly convinced myself! OM's fundamental concepts of efficiency improvements, cost control and increased access are the underlying themes in this entire debate.

"You research in the healthcare area, don't you?" the hostess had queried me, nodding in my direction and breaking my chain of thoughts, "what do you think is the *best* solution"? "I am not even sure I know what the problem really is", I had wanted to blurt out, but had instead demurely said "it all depends upon how one is defining the problem". That no one was impressed with that response was obvious from the silence that had followed. So, I had hesitantly continued, "none of the proposed solutions by themselves may work in isolation. It appears that the various issues are intricately intermingled with each other and the solutions being proposed seem to be based on a single dimensional view of the problem". After a few moments of silence, the host had pitched in, "let's not forget about the costs imposed by the uninsured on the healthcare system. I think the priority should be on getting such people under the larger umbrella ....."

As newer arguments and counterarguments had started floating in, I recall drifting back to my thoughts. The tenor of the discussion that evening had stark similarities with the predicament I was facing these days working on the grant I had received from a federal hospital system. Being the principal investigator on that grant I was charged with developing solutions for increasing the efficiency of the hospital's Operating Rooms (OR). At the time of starting with the project I had felt that I would be able to readily bank on the vast literature in OM and Operations Research dealing with this exact issue, but I soon realized the limitations of relying on any one specific research stream or solution approach within either of these disciplines. Even if the research objectives of different studies are the same, not only is the treatment of the problem often vastly different, but also are the recommended solutions; rendering any direct usage or even a duplication of

*(Continued on page 10)*

## LEARNING FROM THE HEALTHCARE DEBATE (CONT)

those studies very difficult. For example, I had divided the issue of OR efficiency into separate smaller subprojects, one of those projects is to develop better OR utilization techniques. This problem has been addressed in Operations Research and also in OM literature, where the focus is on developing surgery schedules that better match the uncertainty in demand and surgical times. In contrast, other OM researchers address the same issue by analyzing how scheduled-surgery cancellation rates can be decreased. While the first set of research primarily relies on analytical modeling for surgery schedule creation, the second set of OM research, depending upon the training of the OM researcher, focuses on developing solutions based on varying solution approaches - from six sigma to simulation. While both streams of research tackle the same issue (efficient OR utilization), each by itself in isolation may not be sufficient in a real setting. In fact, developing processes to implement just one of those solution techniques without factoring in the issues that the other one is addressing may actually be counterproductive, or at least may not result in the intended improvements. This theme of taking just a one-dimensional view of problems seemed to resonate with that evening's discussion. I remember pondering on the question, whether the OM area should increase the synaptic points among its various sub-fields, when my thoughts were broken up by the comments the host was making, trying to wrap up the discussion.

"Clearly, there are many possible good ideas out there to tackle this mess. Maybe, focusing more on the similarities among the suggestions, rather than the differences, can be a first step towards generating a basis for developing a consensus". As heads had nodded in unison, the host had continued, "maybe no single alternative solution is any more superior to the other, perhaps the need is to develop a plan that ties in all these seemingly different, yet somehow interrelated perspectives".

That insightful observation set me thinking, whether we OM researchers also often focus too much on the differences between our research approaches and thus fragment the problem to the level where it nicely fits into our respective research strengths? Was OM research lacking Systems Thinking? As (the late) Prof. Ackoff said more than 30 years ago - "A problem never exists in isolation; it is surrounded by other problems in space and time. The greater the context of a problem a scientist can comprehend, the greater are his chances of finding a truly adequate solution." I wondered if we OM researchers were forgetting our roots, as (most) OM problems by their very nature are multidimensional and multidisciplinary.

I wondered if I too was guilty of following this trend of narrowly defining problems, in context of the other research project that I was involved in at another hospital. In this other hospital, automatic supply dispensing stations had been installed in the Operating Rooms, replacing manual shelving. The hospital had hoped that this would lead to more efficient supply chain processes and lower overall inventories. However, the new systems were causing nurse dissatisfaction and the hospital wasn't sure if overall inventory had reduced. After spending a few days observing the system, I could figure out that any improvements in this environment would involve a solution based on studying the human-machine interface issues (nurse's training with the system, ease of use, etc.), inventory management issues (the

basis for setting par levels as the machine kicks in automatic orders, multiple stocking points of inventory, differing lead times for different supplies and hence multiple orders to the same vendor leading to extra freight charges, high-level of substitutability among supplies, etc.), process management issues (how does the machine handle physician-preferred items vs. the regular items, why do case-carts always have a few items missing, which leads to the OR nurse rushing to the machines between surgeries, etc.) and many other very traditional OM issues. Solving just one of those issues alone will likely only result in a small visible improvement, if at all any. Because of my training, I was getting inclined to just look at the inventory management issues. However, the organization would benefit the most if other OM issues could also be addressed simultaneously and jointly, to hopefully produce a comprehensive solution.

I remember leaving that get together thinking, whether OM's credibility and visibility would increase if OM researchers were to broaden their research scope to encompass more of OM areas within their research? Shouldn't OM researchers be seeking more crossovers among their respective research areas? Could too much fragmentation be the reason that OM doesn't appear to be in the forefront of this healthcare discussion? Didn't Prof. Hopp (POMS President) recently write in a *POMS Chronicle* editorial that OM researchers should strive to increase connections with others? Maybe, we should try to also increase connections among the various OM sub-fields. I wondered whether I was just rephrasing the same breadth of research vs. depth of research argument; or the argument for the need for more systems-perspective. Perhaps not, what I had learnt from that day's discussion was that often when the problem complexity is large, it is natural for people to slice-and-dice the problem to such a level that it then begins to fit their view of the world. We probably do the same with our research problems too. While, continued research within each subfield will continue to solidify the foundations of OM, there also appears to be enough opportunities out there for researchers to integrate the various OM concepts to develop newer and complete solutions from an organization's perspective.

"We should do this more often. This was very .... helpful", I remember saying out loud. "So, which argument did you find the most convincing", the host asked back. "All of them"! I replied.

**Acknowledgements:** I am thankful to Sebastian Heese for inviting me to contribute to the *POMS Chronicle* and for his helpful comments. Thanks also to Liam O'Neill and Srinagesh Gavirneni for their suggestions and comments on earlier drafts of this article.

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dustrial Engineers, Production and Operations Management Society (POMS), Military Operations Research Society, Human Factors and Ergonomics Society, American Industrial Hygiene Association, American Association of Mechanical Engineers, Society of Manufacturing Engineers.

## FUTURE RESEARCH IN CLOSED-LOOP SUPPLY CHAINS



### Future Research in Closed-Loop Supply Chains

Gilvan "Gil" C Souza

Kelley School of Business, Indiana University

Coming back from INFORMS, I met a colleague at the San Diego airport, and having a few minutes before the flight, we started discussing research. Before I discuss our conversation in more depth, let me give readers a brief background.

My research has been primarily in closed-loop supply chains (CLSCs)—supply chains with flow of products post-consumer use back to manufacturers, which includes remanufacturing and reverse logistics—although I have also maintained a somewhat active agenda in new product introduction and technology management in general. My interest in CLSCs started as a doctoral student at UNC, after taking a seminar in CLSCs with Gerardo Ferrer in 1998, now at the Naval Postgraduate School. I have written papers with many of my colleagues in the area: Vishal Agrawal, Atalay Atasu, Joe Blackburn, Mark Ferguson, Moritz Fleischmann, Dan Guide, Mike Ketzenberg, Beril Toktay, Erwin van der Laan, Luk Van Wassenhove, my doctoral student Eylem Koca, and Dan's doctoral student James Abbey.

As it is clear from my list of co-authors, we in the CLSC area enjoy collaborating with each other. This could be partially attributed to the annual workshop in CLSC, which draws about 70 researchers each year, and has been held at such places as Carnegie Mellon, INSEAD, Penn State, Vanderbilt, Erasmus University of Rotterdam, Aristotle University of Thessaloniki (Greece), Georgia Tech, and TU-Braunschweig / Magdeburg (Germany); there is a sense of community in these workshops (and in our tracks in other conferences such as INFORMS and POMS) that fosters deeper ties among researchers. In 2010, the workshop will be held at McGill University, by Tamer Boyaci and Vedat Verter. Proper credit here should be given to Dan Guide and Luk Van Wassenhove, who started and ran the first four workshops, and continue playing an active role in current workshops; Jo Van Nunen and Joe Blackburn are also on the planning committee for future workshops. The membership at the College of Sustainable Operations at POMS has a significant overlap with the researchers that attend this workshop.

Back to my colleague at the San Diego airport—he was familiar with some of the CLSC research, and he asked a pointed question, which I am paraphrasing as: "Haven't you guys done everything there is to do in CLSCs?" This was an interesting question, because indeed there has been quite a bit of research and growth of research in this area, as well documented in a recent article by Dan Guide and Luk Van Wassenhove, published in *Operations Research*. My goal here is not to repeat the arguments and history of the field, which is nicely described in their article, but rather to offer more ideas and suggestions for future research, which has several philosophical similarities with their forum article. This is also a good opportunity to put a plug in for a forthcoming special issue of *POMS*, whose theme is the interface between new product development, innovation, and sustainability; the deadline for submissions is Feb 28, 2011. Mark Ferguson, Glen Schmidt and I are co-editors. We at Indiana U. will also host a mini-conference on the subject on Oct 14-15, 2010 (see <http://mypage.iu.edu/~gsouza/index.htm>); our

hope is to encourage more submissions in this important—and often neglected topic—by holding a dedicated conference before the deadline for submissions for the special issue.

It is helpful to classify research in CLSC into three buckets: strategic, tactical, and operational issues. A major strategic issue is the design of a CLSC. From a pure network design standpoint, this includes the location of collection points for used products, consolidation centers, testing and disposition centers, remanufacturing and recycling facilities, and remarketing facilities. Other network design issues include the design of incentives among the supply chain members (for example, incentives to increase collection rates at collection points), and establishment of partnerships among the players. For example, Ford has many certified partners who remanufacture Ford parts and engines.

A strategic issue that has always fascinated me (and many others in the CLSC area) is—should an OEM remanufacture? There are many arguments in favor, such as extending the product line with a remanufactured product that is (typically) sold at a significant discount, as much as 20%-55%, compared to new products, and therefore providing a buying opportunity to a customer segment that would normally not be reachable with only new products (thus increasing profitability). Other arguments include brand protection (by offering a "certified" remanufactured product, the firm is protected against third party remanufacturers), take-back legislation (although legislation is focused primarily in recycling), and plain old value recovery. A significant concern many OEMs have with remanufacturing regards cannibalization—the fear that a (cheaper and often less profitable) remanufactured product eats into the sales of (more expensive and more profitable) new products. Research has addressed these issues extensively, and the reader is referred to Guide and Van Wassenhove (2009) and Souza (2008) for a review.

One strategic research question that has basically been ignored in CLSC research is the interface between product design and recovery. Do firms design products with product recovery in mind? I just came back with Kyle Cattani from a visit to a Cummins remanufacturing facility in Memphis, TN, where they remanufacture parts and modules used in diesel engines (remanufacturing of whole engines is done at a plant in Mexico). In a lively conversation with senior managers, they assured us that feedback from remanufacturing operations is taken into account by design engineers, and one of the members of the product development team comes from the remanufacturing side of the business. It would be interesting to understand how firms make design trade-offs such as these—for example, the firm can increase remanufacturability of a part by designing it more robustly, but that comes at the expense of a higher cost (and potentially lower performance due to weight considerations) of the part when new. In Cummins' case, we are talking about parts—such as a water pump or a turbocharger—that can be remanufactured as many as 10 times, so there is significant value left in diesel engines at the end of their useful life. For other product types, such as consumer electronics, this interface is not as clear, and there is a significant need for research in this area. Of course, I am only discussing remanufacturing in this example, but design for sustainability in general is an interesting but neglected topic in the OM literature.

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## SPECIAL ISSUE OF POM: NEW PRODUCT DEVELOPMENT, INNOVATION AND SUSTAINABILITY

(Continued from page 11)

On a more tactical level, the basic research question regards matching supply of used products (often called cores in the industry) with demand for remanufactured products or parts. A critical component of this is product acquisition (how many cores to procure, when, at what cost, and at which quality level) and disposition (what to do with used cores: remanufacture, recycle or dismantle for parts, for example). Again, there is a large body of research in this area, but research often assumes that demands are given, and the firm must find the least costly plan to meet these demands. A revenue management approach to the problem that considers profitability of the different recovery options for a core, along with demand uncertainties, is needed, and this is an emerging research area. For example, even though dismantling may be less profitable on a per unit basis than remanufacturing, it could well be the case that the demand for dismantled parts has less uncertainty than the demand for remanufactured products. On an operational level, things become very situation specific—for example, scheduling of parts in the remanufacturing shop floor, and production planning and control, in general, for managing remanufacturing, recycling and dismantling operations. These issues are important, but they tend to be more context dependent, and as a result, not as friendly to generalizable results.

Let me mention three final thoughts. In most of the CLSC research, the environmental impact aspect of sustainability has only been incorporated in papers dealing with the optimal design, from a policy maker's standpoint, of environmental take-back legislation. Yet, we see many cases where firms are actively pursuing a sustainability agenda in ways where the short term payoff is not obvious. Some examples include LEED building certifications, increasing recycling and reuse beyond legislative requirements, greening the supply chain (e.g., Wal Mart), engaging with communities, etc. In research dealing with decision support models in CLSCs, particularly at the strategic level, environmental considerations could be incorporated.

Second, just as Dan Guide and Luk Van Wassenhove mention in their recent article, I believe research should be grounded in practice. Go out, visit a remanufacturing plant, and talk to managers. Brainstorm issues with your colleagues. Try to get connected to practitioners in the area, for example, the Reverse Logistics Association ([www.reverselogisticstrends.com](http://www.reverselogisticstrends.com)) has three conferences and several one-day workshops annually.

Finally, I would like to highlight a book chapter by Beril Toktay and Vishal Agrawal, upcoming in a book edited by Mark Ferguson and myself (of course, self-promotion is in place) in April of 2010, on interdisciplinary research in CLSCs. They discuss interfaces with industrial ecology, marketing, engineering, behavioral operations, and other disciplines, and provide many thoughtful avenues for future research. This brings me back to my colleague's question about whether all the research has already been done in this area. When you think in terms of all the difficult problems that fall on the boundaries of the OM area, we have only begun to scratch the surface.

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### Special Issue of POM: New Product Development, Innovation and Sustainability



Mark Ferguson  
[mark.ferguson@mgt.gatech.edu](mailto:mark.ferguson@mgt.gatech.edu)



Gil Souza  
[gsouza@indiana.edu](mailto:gsouza@indiana.edu)

Guest Editors:

Glen Schmidt  
[glen.schmidt@business.utah.edu](mailto:glen.schmidt@business.utah.edu)



Submission Deadline: Feb 28, 2011

There is little academic literature on the interface between new product development, innovation and sustainability, from an operations management perspective (we use the term "product" here to include services). The engineering literature has several "Design for Environment" guidelines, but they are, for the most part, prescriptive formulas for designing products that are easy to disassemble, take-back, recycle or remanufacture. There is little understanding on the economic trade-offs firms face in designing environmentally-friendly products. One clear example is when the firm designs a product with superior environmental performance (e.g., low energy consumption), but that requires the use of a more expensive technology. A second example is when the firm may improve product quality by designing more robust and durable products, which may facilitate recovery and remanufacturing and reduce landfill scrap, but there is an increase in variable production costs which may actually encourage continued use of products that have become "environmental clunkers." Other areas of sustainability in which product design plays a significant role include the use of recycled materials, products certified to meet certain standards (e.g., LEED construction, energy star) and so forth. The goal of this special issue is to publish high quality and relevant research on the interface between new product development, innovation, and sustainability. We welcome papers that open/broaden our perspective on this important interface, including papers inspired by other disciplines such as engineering or environmental management. Topics of interest include, but are not limited to:

- Design for sustainability
- Cradle-to-cradle design
- Impact of recovery options—recycling and remanufacturing—on product design
- Evaluating how sustainability considerations impact the new product development process
- Incorporating environmental impacts in the product line introduction decision
- Empirical studies on design, innovation, and sustainability interactions
- Assessing how public awareness of the need for "design for sustainability" influences new product development processes
- Assessing how product design can help build public awareness of the need for sustainability

Please direct your manuscript to the Guest (Department) Editor Gil Souza at <http://mc.manuscriptcentral.com/poms>

## NEWS FROM ASIA AND LATIN AMERICA

## China Chapter News

Submitted by Qing Ye

Tsinghua University, Beijing, China

The third annual meeting of the POMS China chapter was held at the University of Science & Technology Beijing (USTB) on July 11-12, 2009. The conference included presentations and discussion sessions. Nearly 100 members attended. The main theme of this year's meeting is Green Manufacturing. Mr. Qiang Gu from the Ministry of Industry and Information Technology of China gave a keynote speech on "Green Manufacturing in China".

During the conference, several scholars also gave a speech and shared their experience and views on research and teaching on operations management in China. These scholars include: Professor Jiaqin Yang from Georgia College & State University, Professor Jian Chen from Tsinghua University, Professor Shoufeng Ji from Northeastern University of China, Professor Fengcai Ma from USTB, Professor Yongjian Li from Nankai University, and Professor Aihua Fang from Wuhan University.

On July 12 the members had a plant tour to a concrete manufacturing factory in Beijing and learned their successful experience in sustainable operations.

The next annual meeting will be held at Fuzhou University.



## Deans from OM

Ravi Kumar

Dean, College of Business

## Korean Advanced Institute of Science &amp; Technology

The previous issue of the Chronicle identified a handful of OM Professors that were recently named Deans of prominent Business Schools. Others to add to that list include Ravi Kumar, who was appointed as dean of the KAIST College of Business on June 30, 2009, and Tomislav Mandakovic who is now Dean of the Andreas School of Business, Barry University in Miami. Congratulations to both!

Tomislav Mandakovic

Dean, Andreas School of Business

Barry University, Miami



## Supply Chain Research and Education Gains Momentum in Latin America

Edgar E Blanco

MIT Center for Transportation &amp; Logistics

Executive Director SCALE Latin America

In 2008, the MIT Center for Transportation & Logistics (CTL) officially launched the Center for Latin American Logistics Innovation (CLI) in partnership with LOGyCA in Bogotá, Colombia. This center is the newest member of the Global SCALE (Supply Chain and Logistics Excellence) Network, an MIT CTL initiative aimed to increase the development and adoption of new innovations in supply chain management across the world. The SCALE Network consists of independent yet collaborating centers dedicated to shaping the future of education and research in transportation, logistics and supply chain management.

During its first two years, CLI has established partnerships with seventeen leading universities from eight Latin-American countries (Colombia, México, Costa Rica, Panamá, Perú, Brasil, Argentina and Chile), launched a Graduate Certificate program, hosted several events across Latin America attended by over 1,000 professionals in the region, and established a collaborative network of regional faculty. On the research front, CLI has five major active projects engaging ten corporate sponsors, including eight Latin American multinational companies, and students and researchers from four different countries in the region.

The flurry of CLI activity is a reflection of the vibrant business and academic community in Latin America. As I have traveled throughout the region building the CLI network, I have been fortunate enough to witness first hand the level of energy and commitment of students, academics and practitioners in the field. This is good news for the long-term development of operations management in the region. However, there are also some important roadblocks. Besides the well-known challenges faced by Latin American economies that ultimately affect educational and research budgets, there is still the need for the academic operations management community to create stronger ties with local businesses and with peers within the region. Initiatives like CLI or the newly created Georgia Tech Trade, Innovation & Productivity (TIP) Center in Costa Rica are important steps on this direction for the region.

The guiding principle behind the Global SCALE Network is that innovation occurs all over the globe. No single region corners the market in new ideas. By bringing together researchers, students, and practitioners from Latin America, CLI is helping to improve both the state of art and practice for Supply Chain Management in the region.

To learn more about CLI: [www.cli-logyca.org](http://www.cli-logyca.org)

To learn more about the MIT Global SCALE: [ctl.mit.edu/scale](http://ctl.mit.edu/scale)

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## CROSS-CULTURAL RESEARCH IN OM



### Cross-Cultural Research in Operations Management:

A Conversation with Aleda Roth,  
M. Johnny Rungtusanatham, and Chris Voss

By Eve D. Rosenzweig

Goizueta Business School, Emory University

**Eve:** As globalization increases, my sense is that Operations Management (OM) scholars have a unique opportunity to influence cross-cultural management theory building and practice. To better understand the current state of and future opportunities in OM cross-cultural research, I recently spoke with POMS members Aleda Roth, Johnny Rungtusanatham, and Chris Voss.

**Eve:** What is cross-cultural research? For example, suppose one investigates research question(s) using data that happen to be collected from multiple countries. Is that cross-cultural research, or is cross-cultural research something more than that? What does cross-cultural research involve?

**Aleda V. Roth**

Burlington Ind. Professor of Supply Chain Mgt  
College of Business and Behavioral Science  
Clemson University



**Aleda:** In OM research cross-cultural research involves comparisons of at least two *cultural groups*, which for the most part in OM are different nation states and/or distinctive ethnic groups within a country (e.g., U.S. vs. Japanese workers in Toyota's North American plants). While there are diverse meanings of culture, the common thread is this: each addresses the set of shared characteristics that are particular to the people within a group. Cross-cultural research investigates the causes and effects of cultural variation among groups. It can be behaviorally oriented (i.e., tap into observable patterns of behaviors, customs, and norms) or cognitively-oriented (i.e., reflect common ideas, beliefs and knowledge). Moreover, comparisons can be *intercultural*—studying the diversity among cultural groups, or *intracultural*—addressing the subcultures within a culture. Both types apply the traditional scientific quantitative method and/or qualitative approaches. The former focuses on rigorous data collection techniques, such as survey research; and the latter on extensive fieldwork that provides an insider's situational view of reality. Intercultural, versus intracultural, research generally has more complex methodological issues to consider in the design and conduct of the research. Finally, cross-cultural research can be *exploratory* in that little is known about the cultural differences and similarities *a priori*; or it can be *confirmatory*, in which theory-based models of relationships between the cultural variables and other variables are specified in advance and tested. Cross-cultural research in OM is typically behaviorally-oriented, intercultural, and exploratory.

**M. Johnny Rungtusanatham**

Assoc. Professor of Operations & Management Science  
Carlson School of Management  
University of Minnesota



**Johnny:** Cross-cultural research has a very distinctive requirement in that the research question should consider explicitly the impact of cultural variables. When one collects data from ten countries and all that one is doing is comparing results or relationships across countries, for example,

that's not cross-cultural research. That's more appropriately referred to as comparative research. If one were to include dummy variables for "countries" during data analyses, all that one is doing is treating "countries" as a control variable to reflect the a priori assumption that differences between countries exist and do matter. That's also not cross-cultural research. Cross-cultural research goes further; it begins by acknowledging that there may be differences across countries/cultures and focuses on explicating whether and to what extent (i.e., how and why) country/cultural characteristics may affect the research question being asked or the implied answer to the research question being asked. One would have to actually specify upfront why a relationship of interest may or may not hold in country X versus country Y.

**Chris Voss**

Emeritus Professor of Management Science  
and Operations  
London Business School



**Chris:** Cross-cultural research is more than collecting data from multiple countries. It must involve consideration of cultural aspects of the phenomena being studied. This requires either measurement of some hypothesized cultural aspects, or the use of established scales, most prominently those of Geert Hofstede (Hofstede 1984).

**Eve:** What are some key research questions in Operations Management (OM) that you believe should be subjected to cross-cultural research? Where are the critical gaps in the OM literature?

**Johnny:** OM is a discipline in which decisions that managers make in an operations or supply chain context are of research interest. Cross-cultural research comes into play because there are cultural variables that affect the way people (i.e., managers) perceive the world, what's truth, what's fact, what's assumption, and so forth. Any research question focusing on what managerial decisions are being made in an operations or supply chain context can, therefore, be investigated in a cross-cultural context by asking the following consequent research question: Do managers in this country (e.g., China) approach this decision (e.g., resource allocation) in a manner similar to that of managers in the USA or in Europe? If so, why so? If not, why not? Many topics of current interest to OM scholars and practitioners can, as such, be evolved to become more cross-cultural in orientation, design, and execution.

One specific area that begs naturally for more cross-cultural research, in my opinion, is the service operations area. By definition, a service involves people – both as service providers and as customers. Cross-cultural differences, therefore, inherently affect the design and the delivery of the service because of this involvement of people. Disney Hong Kong is a good example. Disney tried to replicate the US-based Disney culture in Hong Kong. When it initially opened, there were many labor issues because the US-based Disney culture was not palatable to the Chinese people in Hong Kong. What this example suggests is the need

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for research enhancing understanding of which service design principles are universally-applicable, which are contextually applicable, and which are not, as well as how and why some service design principles are universally applicable and relevant. Such understanding can then prompt investigations into how and why cross-cultural differences affect the applicability and relevance of specific service design principles.

Another specific topic that deserves more cross-cultural research is the buyer-supplier contracting topic. Specifically, do managers in one country (e.g., India) approach the contracting process in a manner similar to that of managers in Europe or the US? If not, why not? If so, why so? Assuming that people are rationally motivated by economic gains may not be a sufficient lens to really understand the complexity of the buyer-supplier pre-negotiation and actual negotiation process that leads to contractual terms.

Alternatively, one can approach cross-cultural research in OM by looking at very specific operations-based and/or supply chain-based relationships that have been uncovered in a US context and then asking would the differences in culture affect these relationships such that either the sign of these relationships or the magnitude of these relationships changes. Cross-cultural OM research of this nature is designed specifically to test the universality of previously discovered and validated theories in OM. My own research into the universality applicability of the Deming-based definition and theory of TQM (Rungtusanatham et al. 2005) would be an example.

By the way, to really want to understand whether or not operations-based or supply-chain theory discovered in one country (e.g., US) might or might not apply in a different country (e.g., South Africa), one must know enough about South Africa to be able to think through conceptually how and why differences and similarities can be expected. This would necessitate either a thorough reading and appreciation of the anthropological, psychological, and/or sociological research about South Africa, or an acquisition of country expertise through collaborators.

**Chris:** One important question pertains to the fact that much survey research in OM is based on samples predominantly drawn from large multi-national firms. A key question then is: Does the behavior of managers in a firm reflect the culture of their country, or the culture of the multi-national's home country? In many multi-national firms the management in any country, particularly in Europe, will be drawn from a wide range of cultures. How might this impact the way in which a manager might behave or respond to questions?

In cross-cultural study, it is often hypothesized that there may be differences due to "culture." However, there is the need for broader examination of what culture is and what factors are behind country differences. In fact, it can be argued that many differences between countries may be due to different contextual factors such as economic and legislative differences. For example, in most of Europe there is significant protection of the workforce. It is both expensive and difficult to lay people off. Indeed, the concept of laying people off and furloughs are completely unknown in some countries as they are not legally allowed. This clearly can lead to significant differences in operations management practices and policies, and thus is an important area of inquiry.

Further, sometimes it is not clear whether differences are cultural,

economic, or a combination of both. This can be illustrated by an example that I faced in some previous research in services (Voss et al. 2004). North Americans are known as very generous tippers, 15-20% being common. Europeans are notorious for not tipping or leaving very small tips. Is this a cultural or an economic difference? It can be argued that tipping behavior is a function of the economic context which in turn drives peoples' behavior. In Europe, there are statutory and often generous minimum wages, and service is often included in the check. Therefore, tipping is not seen as an important part of a server's income and tipping is low. In contrast in the US, servers often rely on their tips as the major source of income and therefore there is considerable social pressure to tip generously.

It is clear that there will be considerable contextual differences across countries and companies; research must look at economic, legislative, as well as cultural differences between countries. For example, in an earlier study of manufacturing strategies across regions and cultures, my co-authors and I found it necessary to explore all of these in seeking to explain differences between countries (Lindberg et al. 1998). An additional issue to consider is that whereas culture may be stable; economic, and legislative differences may be more dynamic.

Other aspects of OM where understanding cross-cultural differences is important include product and service design, product and service supply chain management, and outsourcing and operations strategies. The growth of behavioral operations management can also be a trigger for cross-cultural research. Increasingly, theory in OM and supply chain management makes behavioral assumptions about many aspects including motivating, relationships, contracts etc. Cross-cultural research can explore the extent to which these assumptions are valid across cultures. Across cultures could be across different countries, or across different cultural groups in the same country.

**Aleda:** New, high quality cross-cultural research is needed to bridge the multiple and overlapping areas where a number of research voids exist. First, classical views of distance related factors—geographic, political, economic, technical, and cultural—are pervasive in shaping operations and supply chain strategies, practices, and performance outcomes. Taken together, these distance factors are difficult to disentangle in determining cause and effect, and in turn, leave unresolved paradoxes. Given the rise in product recalls and quality problems, rigorous comparative research across cultures on OM strategies, practices, and performance outcomes associated with production outsourcing and offshoring is sorely needed. Understanding the cultural determinants of operational and supply chain risk and practices for risk mitigation are of paramount importance for scholarly inquiry. For example, Roth et al. (2008b) highlight the unique aspect of Chinese culture that are posited to negatively influence product quality; and the authors conceptualize what they call the 6Ts approach to reduce quality risk. Their model is yet to be tested empirically. In other related research, using matched paired samples of Puerto Rican

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and U.S. pharmaceutical plants owned by the same company, my co-authors and I were able to isolate the effects of economic/cultural factors on quality risk in the context of “pure offshoring” (Gray et al. 2009). Due to hierarchical governance in pure offshoring, theoretically operational risk should be mitigated; however, transfer of quality management systems internationally to sister plants is not easily accomplished, as it involves much tacit knowledge transfer. Further research is needed to explain theoretically how as other distance factors come to play in increasing risks, such as political risks associated with asset expropriation and instability and coordinative challenges that elevate the level of behavioral uncertainty. Adding outsourcing of production/ services to other legal entities and partners in a global supply network is posited to exacerbate operational complexity and associated risks with transferring and monitoring these activities along the value chain (Roth et al. 1997).

Second, there are numerous open cross-cultural questions covering critical aspects or stages in the value chain, including innovation and idea generation, product and process development, knowledge sharing and technology transfer, execution of best practices, quality management, performance measurement, buyer-supplier relationships, operations and supply chain strategies, and sustainability. (See Zhao et al. 2006 and 2007 for an in-depth discussion and specific research questions as they pertain to China.). For instance, further questions involving how managers can leverage individual and organizational knowledge across a global supply network are of interest to OM scholars and practitioners. There is a need to better understand from an OM lens how knowledge transfer processes among globally dispersed buyers and suppliers, while accounting for cultural socialization mechanisms. What interventions are best deployed across cultures to effectively influence the adoption of new technologies, execution of best manufacturing practices and/or introduction new product and service success? Mindful of the emerging thrusts towards sustainable operations internationally, cross-cultural research can provide insights on reverse logistics, changes in manufacturing practices, supply chain complexity, and new models that capture carbon footprints as part of the total delivered product costs.

Third, while much is known about operations and supply chain management in developed countries, significantly less research is available as countries cascade down the emerging market schema, from “advanced emerging” (currently including: Mexico, Brazil, Hungary, Poland, South Africa, and Taiwan) to “secondary emerging” (currently including: Argentina, Chili, China, Colombia, Czech Republic, Egypt, India, Indonesia, Malaysia, Morocco, Pakistan, Philippines, Peru, Russia, Thailand, and Turkey) to “frontier” (e.g., Bulgaria, Kenya, Qatar, and Vietnam). In emerging markets beyond culture, there are many infrastructural constraints, economic, and operational barriers that must be overcome. Moreover, within less developed countries, there are less likely to be uniform standards of performance measures; and if they exist, they may not be enforced. Further, performance metrics for individual companies may not be transparent. These issues lead to such questions as: What are the most effective ways of addressing performance differences across developed vs. emerging economies? How can we measure and analyze progress? What performance metrics should be prioritized to improve operational effectiveness?

Another set of questions stems from the dynamics of culture and its influence on OM knowledge. Is there a ‘life-cycle’ of operational factors that correspond to moving up the economic development ladder? To what extent can “frontier” and “secondary emerging market” countries leapfrog their advanced country counterparts in acquiring operational know-how, such as through improved education, company social responsibility, and/or technology? What is the impact of social networking and media for creating operational advantages cross-culturally?

Fourth, huge gaps exist in cross-cultural research on service-based versus manufacturing firms. I am continually amazed while traveling to emerging market economies (e.g., China, Thailand and India) about the extremes in services from highly developed ‘experience’-based services (e.g., retailers, hotels, restaurants, etc.) to the more mundane, like retail banking. This observation leads to a more general question of what can be learned from cross-cultural research on experience-based services. What design and delivery elements are generic to world class services and which are unique to the country/culture? Many years ago in a site visit to Singapore’s 1600-bed, general hospital, I saw first-hand how focused factory concepts were adapted to fit another culture. By law, all the medical care for every patient had to be given at the same level with the same personnel; however, the hospital’s ancillary services were at “first-” and “economy-class” levels, including differentiation in non-emergency admissions, meals, and rooms. Across multi-national manufacturers and service providers, cross-cultural operational issues arise about managing employees and satisfying customers. To what extent do classical models like the service profit chain hold up across cultures? What are the best practices for satisfying foreign employees and what roles do operations play in adopting, modifying and innovating products, services and processes to new foreign customers and markets. We know relatively little about how common notions in the U.S., like service recovery processes and interventions, translate across cultures generally and which are unique in affecting customers’ perceptions of service recovery. Another area of cross-cultural research should address business-to-business (B2B) service global supply chains, and the inherent complexities, challenges, and practices that arise from serving multiple cultures.

**Eve:** *How does OM compare to other business-related fields with respect to development of a cross-cultural research base? What can we learn from other fields?*

**Chris:** Cross-cultural research in OM has often been too narrow. In disciplines where cross-cultural research has been a key part, such as anthropology, research is characterized by in-depth ethnographic research methods and a wealth of theory such as structuralism. Where time permits, more in-depth methods such as ethnographic and case-based studies should be used in OM research where cross-cultural research is central.

**Johnny:** In a nutshell, we are behind in developing a cross-cultural OM research base. To accelerate this development,

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I would encourage reviewing articles in the *Journal of International Business Studies* (JIBS). JIBS is a premier outlet for research into international management and business. On its website, JIBS ([http://www.palgrave-journals.com/jibs/jibs\\_statement.html](http://www.palgrave-journals.com/jibs/jibs_statement.html)) states that it welcomes research that looks into:

- The activities, strategies, structures and decision-making processes of multinational enterprises;
- Interactions between multinational enterprises and other actors, organizations, institutions, and T
- The cross-border activities of firms (e.g., intrafirm trade, finance, investment, technology transfers, offshore services);
- How the international environment (e.g., cultural, economic, legal, political) affects the activities, strategies, structures and decision-making processes of firms;
- The international dimensions of organizational forms (e.g., strategic alliances, mergers and acquisitions) and activities (e.g., entrepreneurship, knowledge-based competition, corporate governance); and

Cross-country comparative studies of businesses, business processes and organizational behavior in different countries and environments.

In my own research, I have looked to this journal to provide me with valuable insights on not only the type of questions I may be interested in asking about operations or supply chain phenomena but also the methods that should be followed in executing rigorous cross-cultural empirical research.

**Aleda:** Basic social sciences—psychology, sociology, and anthropology—and related disciplines—economics, education, religious studies, and political science—are more advanced in cross-cultural research than the management fields, in general. Much of the seminal research methodology is grounded in comparative studies of culture from the basic disciplines, where over time, there has been a significant evolution in the guidelines for what constitutes good methodological practices and in the development of specialized outlets for disseminating methods (e.g., *Methodology of Comparative Research*, *Journal of Cross-Cultural Research Methods*, *Cross Cultural Research*, *Journal of Cross-Cultural Psychology*, *Applied Cross-Cultural Psychology*, *Comparative Sociology*, *Journal of Cross-Cultural Psychology Information*, *World Cultures*, *International Economics & Economic Policy*, *Global Economic Review*, *International Journal of Social Economics*, *Cultural Studies*, etc.).

Pressures towards globalization in the 1980s gave rise to a well-spring of OM international, supply, and technology management research in the 1990s (Roth et al. 1997), which has exploded over the past decade. Despite its inherent importance to OM, the quality of cross-cultural research methodology lags other management disciplines. Much of the extant research is descriptive, exploratory, and case-based. While survey research is on the rise, one particular thorny problem has surfaced. Rarely is measurement equivalence established in OM scales (Roth et al. 2008a; Gray et al. 2009; Mullen 1995; Rungtusanatham et al. 2005 and 2008). OM scholars would benefit from specialized methodological knowledge and skills to ensure the reliability and validity of their metrics and the generalizability of their empirical findings. Lessons can be learned from the basic sciences in both quantitative and qualitative ap-

proaches for conducting and analyzing cross-cultural comparative research (van de Vijver and Leung 1997).

**Eve:** *What are some conceptual and/or methodological difficulties associated with conducting cross-cultural research in OM? How can we mitigate those difficulties?*

**Johnny:** The expense and investment one puts into conducting cross-cultural research are non-trivial. Take, for example, cross-cultural survey research involving multiple-item perceptual measurement scales. Today, we know that it is necessary to provide evidence of measurement quality (i.e., reliability and construct validity) for these measurement scales. OM researchers have, in fact, become adept at overcoming concerns with measurement quality (Rungtusanatham et al. 2003). But once we get into cross-cultural research, providing evidence of measurement quality is not enough. We would also have to deal effectively with what's called measurement equivalence. Mullen (1995) is a useful reference on this issue; I have also written recently about this issue as it relates to pooling of data from transparently different groups of key informants in survey research. Informants from different cultures would, of course, fall under this "pooling of data" concern (Rungtusanatham et al. 2008).

Satisfying measurement equivalence requirements means that one has to spend significant more time in the design of data collection instrument (i.e., survey questionnaire) because one has to ensure that the data collection instrument provides equivalent pieces of data across different cultures. If the survey questionnaire were originally developed in English, then one must demonstrate that this same survey questionnaire, if and when translated, would provide reliable and valid answers in cultures in which English is not the primary language.

For example, suppose we ask a question about supplier proximity. The question may, perhaps, be phrased as follows: "How far away is your most important supplier?" If the response choices were to range from "very far" to "not so far," demonstrating measurement equivalence requires that these response anchors, once translated, invoke the same meaning. A supplier who is located 5 miles away may not seem "very far" in the US; a similar supplier who is located 5 miles away (in terms of kilometers) in Japan may, on the other hand, seem "very far" indeed. So as part of executing cross-cultural survey research, one needs to understand not only whether or not the survey questions translate properly but also whether or not these response anchors and their underlying metrics have equivalent meaning across cultures. The conclusion . . . a lot more effort and time, upfront, in the design of the survey questionnaire so that it can satisfy both measurement quality and measurement equivalence requirements.

Going forward, I think we need to be more open to and more cognizant of the progress of cross-cultural research in other disciplines, including international marketing and international human resources. We need to ask the right questions with such questions not simply addressing "Is there a differ-

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ence?” We need to include in our questions “Why should (or why shouldn’t) there be a difference?” Addressing questions in a cross-cultural context means complying not only with the norms of rigor for single-culture research but also the norms of rigor for cross-cultural OM research.

**Chris:** Cross-cultural research needs to reflect that research approaches differ across cultures. There are sharp contrasts in how OM academics trained in different cultures approach research (Drejer et al. 2000; Voss 2006). It can be argued that some countries such as the US and Germany are large and homogenous and this creates a narrow frame for researchers. These differences are also reflected in methodologies. For example, case research and in particular action research and longitudinal case research is more widely used in Europe than in the US.

More importantly, researchers apply different lenses and see things differently. For example, it has taken a very long time for Western researchers to be able to fully understand the nature of operations management in Japan. Our pre-assumptions, our particular research frames, and our difficulty in interpreting what we see has made our learning process both slow and still probably incomplete. This can also be reflected in the framing of research questions. For example, outsourcing research is usually framed from a US perspective focusing on how the US outsourcing company could deal with companies in India or somewhere similar. There is little research from the perspective of Indian or Chinese companies, yet researching OM in these companies is potentially more rewarding for the discipline.

**Aleda:** From the start of my academic career, I was confronted with such methodological issues involving Boston University’s Global Manufacturing Futures Study. I played a principal role in the development of three large-scale global surveys, each of which was repeated over multiple time periods—two covering manufacturing strategies and one on services (see Roth et al. [1997] and Roth et al. [2008a] for details). In addition, I have taught in Europe, Asia and South America, conducted collaborative, cross-country field research, and consulted with many international firms. One of my first publications in this area explored the measurement of manufacturing paradigms across three global regions, wherein dimensions of competitive priorities showed empirically the broad differences among three geographic regions, and in turn, the respective prototypical strategies varied considerably (Roth et al. 1989). Looking back, this was one of the first empirical papers that revealed regional differences in manufacturing strategies. These experiences enriched my understanding of the subtle differences among national cultures and gave me a deeper appreciation of the importance of good empirical science for influencing the quality of cross-cultural research.

van de Vijver and Leung (1997) report that cross-cultural researchers must not only address the substantive aspects of the study (i.e., 1) the formulation of the research questions and constructs; 2) the research design strategy; and 3) data analyses); but also, they must take deliberate steps to reduce threats of bias at each stage of the research process.

Yet making comparisons across cultures is extremely difficult when subjective judgments are involved. Many technical challenges must be tackled, such as 1) adapting measures to multiple languages

and cultures; 2) designing of questionnaire and media (e.g., paper vs. web); and 3) sampling and administration. Gaining an understanding of emerging market cultures is even more problematic than industrialized countries since there is a dearth of general knowledge about nuances. For example, when I was conducting research at Citibank in Thailand, I learned that an affirmative answer, ‘yes,’ may in reality translate into ‘maybe.’ OM survey design and measurement equivalence topics are given in Rungtusanatham et al. (2003, 2005, and 2008). See Zhao et al. (2006 and 2007) for China-based approaches that cover many of these technical guidelines as they apply to emerging markets. Finally, Hofstede (1980) discusses methodological issues concerning inferences that can be made from cross-cultural research. Inaccuracies can lead to ecological fallacies (i.e., inferences are made about individuals within a culture from data obtained at a higher level of analyses), and vice versa, reverse ecological fallacies. van de Vijver et al. (2008) discuss the conceptual and methodological issues involved in multi-level cross-cultural research.

**Eve:** *Do you see cross-cultural research playing a prominent role in future OM research? Why or why not?*

**Johnny:** Given the rate of globalization today, the question of “should we do more cross-cultural OM research” is unavoidable; its answer is an unqualified “yes.” If we really want to influence the global practice of OM and its effectiveness, we have to take the manager and the human dimension into consideration. We have no choice but to consider doing more cross-cultural OM research and doing it well.

**Chris:** Globalization is increasing and we have much to learn about managing operations in this evolving environment. I think that there will be a growing role for this research. I also see this growing role as more collaborative. First, it will require working closely with and understanding the perspectives of researchers from different countries and cultures. Second, it will benefit from collaboration from those already doing such research in international business. Finally, I think that it must be broader than cross-cultural as most of the phenomena studied will be influenced by the broad economic and legislative contexts as well as cultural and we risk interpreting differences as purely cultural when they are more broadly based, and whilst culture tends to be static, economic factors change rapidly.

**Aleda:** Comparative studies of international manufacturing and service operations management are bringing us to the frontiers of OM scholarly inquiry. These studies have the potential to revitalize and enrich our discipline enormously. Embodied in our discussion of cross-cultural research is an implied, first-order goal: to test the generality of our existing OM paradigms and theory. In doing so, it is especially constructive to use the notion of paradox towards building and testing operations and supply chain management theories. Conflicting and counterintuitive findings and contradictory management paradigms spanning cultures create tensions that result in paradoxes to be resolved (Poole and Van de Ven 1989). Cross-cultural research provides new lenses in which to explore the contradictory explanations of the same

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phenomena, such as innovation and operational advantage in different contexts. Thus, theory building opportunities exist in identifying, clarifying, and explaining paradoxes generated from cross-cultural perspectives.

Consider the following two examples. In the late 1980s, we observed Toyota's entry into the global marketplace with quality, delivery, flexibility and low cost capabilities. These combinative capabilities, when contrasted with the traditional view of capability trade-offs stirred much debate among operations strategy scholars (Roth 2007). Resolution of these arguments led to fundamentally new views and theories in manufacturing strategy (Clark 1996; Ferdows and De Meyer, 1990; Rosenzweig and Roth 2004; Schmenner and Swink 1998). Today, we see a similar paradigmatic shift with India's Tata Motors surprising skeptics with the 2009 launch of its award winning Nano (Kuczewski 2009). At \$2500, the Nano is the world's cheapest car with fuel efficiency that ekes out more than 50 mpg. Touted as 'the people's car' the Nano is a game changer in that it targets the bottom of the economic pyramid; and once again gives rise to a new way of viewing operational constraints that is contrary to prevailing wisdom in OM. Rather than being limited by traditional paradigms of Western automotive firms, namely, innovation at a premium price, Tata's Nano has flipped the logic by converting this constraint into a solution for India's enormous, underserved mass market. A cross-cultural perspective offers insights for future research into how an emerging foreign competitor develops disruptive technological innovations in design, sourcing, and manufacturing, which once again, can take more entrenched Western companies by surprise (Agrawal and Wadia 2008). Larger Western firms, like GE, are now striving towards 'glocalization' (Immelt et al. 2009). Applying the lessons of this so-called *reverse innovation* logic creates new strategic imperatives for operations, which clash with traditional models of international and manufacturing strategies. The stakes are clearly high for operational agility and supply chain adaptivity, as global competitiveness is accelerating at dizzying rates. There can be little doubt that using a cross-cultural lens to research and observe new practices, if done well, offers significant promise for garnering insights, debunking faulty assumptions, and improving operational effectiveness.

**Eve:** Aleda, Chris, and Johnny - it was a pleasure talking with you about the state of cross-cultural research in OM. I know readers will find your comments insightful and beneficial for conducting research in this important, emerging area of study. Thanks for your time.

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### Brief Bio's for the interviewees (please see page 2 for Eve's Bio):

**Professor Aleda Roth** is an internationally recognized empirical scholar in service, manufacturing, and supply chain strategies. She is a prolific researcher with over 200 publications. Her latest co-authored book is entitled, *Handbook of Metrics for Operations Management: Multi-item Measurement Scales and Objective Items*. She ranks in the top 1% of POM scholars in the U.S. and in the top 2% of all *Journal of Operations (JOM)* authors. Aleda has received over 60 research awards, recently including, a 2009 Distinguished Fellow of M&SOM Society (INFORMS); 2009 Lifetime Achievement Award from POMS Service Management College; 2009 Best Paper Proceedings of AOM; 2009 Center for Services Leadership Distinguished Faculty; listing as a Stellar Scholar in POM; and 2008 Associate Editor Appreciation Award from the *Journal of Supply Chain Management (JSCM)*. She is also a Fellow of the Production and Operations Management Society, Fellow of the Decision Sciences Institute and an International Fellow of the Advanced Institute of Management Research-UK. She is a member of the Supply Chain Thought Leaders Roundtable and The Conference Board's Business Performance Excellence Council. Aleda served as president of POMS; Department Editor for *Management Science* and Deputy Editor-in-Chief for *Manufacturing and Service Operations (M&SOM)*; and is currently a Department Editor for *POM* and an Associate Editor for *Decision Sciences* and the *JSCM*. She consulted with corporate executives at Nestle-Vevey, J&J, GE, TI, IBM, Baxter, Accenture, Deloitte & Touche, Smith and Nephew, U.S. DHHS, Bank Administration Institute and others.

**M. Johnny Rungtusanatham** conducts research on three topics intended to advance knowledge and practice relevant to supply chain process improvement and design, namely quality management and its universal applicability, mass customization and its implementation, strategic buyer-supplier relationship forms and dissolution. His research has won the 2004 Best Paper Award from the *Production Planning & Control* journal, the 2004 Best Paper Award from the

*Decision Sciences Journal of Innovative Education*, and the 2005 E. Grosvenor Plowman Best Paper Award from the Council of Supply Chain Management Professionals Annual Conference. His research has also been recognized as a finalist for the 2005 *Journal of Operations Management* Best Paper Award and as a finalist for the 2008 Chan K. Hahn Best Paper Award from the Operations Management Division of the Academy of Management. Most recently, Rungtusanatham received the 2007 Annual Faculty Research Award from the Carlson School of Management. He has conducted research with, consulted with, and provided executive training for Arizona Public Services, Chevron Corporation, Deere & Company, e-Bags.com, E-Source, Honeywell, Intel, LG Electronics, Medtronic, ON Semiconductor, Phelps Dodge, Seaquist Closures, United Technologies, and Zytec. He is a Senior Editor for *Production and Operations Management* and an Associate Editor for the *Journal of Operations Management* and for *Decision Sciences*.

**Chris Voss** has served as deputy dean at London Business School and a senior fellow at the UK's Advanced Institute for Management Research. He is a fellow of DSI, EurOMA and POMS and was elected distinguished scholar by the OM division of the Academy of Management in 2008. He has researched and written extensively in the area of operations strategy and service operations and is founder and leader of the International Service Study, a multi-country study of service operations, and was president of the POMS College of Service Operations from 2006-2009. His research has been published in: *Journal of Operations Management*, *Production and Operations Management*, *Journal of Service Research* and *Journal of Product Innovation Management*, and others. He was founder and long-term chairman of the European Operations Management Association, and serves on several editorial boards.

(Continued from page 4)

- Western-built jet aircraft, <http://www.iata.org/nr/rdonlyres/a33bc4b3-431b-4690-be6d-678890c8ae3/0/iataannualreport2009.pdf>. Data on expected lifespan are from the World Bank, <http://datafinder.worldbank.org/life-expectancy-at-birth/chart>
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  - The GRI data are from <http://www.globalreporting.org/Home>. The CDP data are from <https://www.cdproject.net/en-US/Pages/HomePage.aspx>.
  - See Professor Sterman's web page at [climateinteractive.org](http://climateinteractive.org).

## HEALTHCARE INITIATIVE / MINI-CONFERENCE

**Healthcare Operations and Information Mgt.**

A team of researchers led by Vedat Verter (left, McGill U) and comprising Marty Puterman (UBC), Mike Carter (UoT), Wojtek Michalowski (U. Ottawa, IS), Steven Blostein (Queens, EE), Alain Pinsonneault (McGill, IS), Bernard Gendron (U. Montreal), Michel Gendreau (U. Montreal) was recently awarded one of the 20 NSERC CREATE awards across Canada. This six-University collaborative research and training experience program aims at training 14 PhD students and 4 Post-docs over the next six years on *healthcare operations and information management*. The CREATE team enjoys the support of 40 collaborators from across Canada, each individual representing one (or more) of the stakeholders in the health sector, in particular health care providers and policy makers.

The first CREATE activity will be a **PhD level course** in "Health care operations management" co-taught by Vedat Verter (McGill) and Marty Puterman (UBC) in Winter 2010. Module I focuses on decision analysis methods and Markov decision processes as means for modeling and solving healthcare problems, and Module II will present an application-oriented overview of the different phases of the healthcare continuum: preventive care, emergency care, acute care, primary care, community-based care etc. The course outline can be obtained from [Vedat.verter@mcgill.ca](mailto:Vedat.verter@mcgill.ca)

The course will be taught in Montreal and Vancouver simultaneously and will be webcast for graduate students residing in other Canadian cities. There are plans to open up the second edition of the course to students outside Canada (i.e., in Winter 2011).

The second planned activity is a 1-week **2010 Summer School** in McGill, designed as a capstone to the PhD course. The aim is to bring the entire cohort of the CREATE trainees across Canada together to foster collaboration and information exchange. The Summer School will be open to PhD Students and Post-doctoral fellows outside the CREATE Program for a nominal fee. Please contact CREATE Program Coordinator, Kristen Oliver, at [Kristen.Oliver@mcgill.ca](mailto:Kristen.Oliver@mcgill.ca)

A number of **PhD student and Post-doc positions** will begin Sept 2010. Interested trainees should contact Vedat Verter.

The CREATE Homepage can be found here:  
<http://create-hoim.mcgill.ca/>

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these are to be followed by the PI&TM reception.

In addition, on Saturday there will be a "meet the Editors" session to discuss three upcoming special issues of POM. The special issues include:

- "Integrating Information & Knowledge Work in Outsourced, Offshored, & other Distributed Business Networks." Guest Editors: Edward G. Anderson Jr. and Geoffrey G. Parker.
- "Technology Commercialization, Entrepreneurship & Growth Driven Operations." Guest Editors: Nitin Joglekar and Moren Lévesque.
- "New Product Development, Innovation and Sustainability." Guest Editors: Mark Ferguson, Glen Schmidt, & Gil Souza."

In addition to these events, Raul Chao has put together a strong PI&TM track, so please plan to attend!

**College of Healthcare Operations Mgt  
Mini-Conference**

Anita Tucker  
Harvard University

Please join us at the upcoming College of Healthcare Operations Management's (CHOM) "mini-conference" on May 6, 2010 in Vancouver, British Columbia, Canada. (The mini-conference is the day before the regular POMS conference.)

The agenda includes industry speakers such as Marilyn Chow, VP of Patient Care Services at Kaiser Permanente, a panel of physicians and a panel of healthcare executives. They will speak about their experiences transforming patient care by implementing OM techniques. We also have industry experts who will talk about the latest thinking in improving the efficiency of healthcare supply chains. The purpose of the mini-conference is to foster dialogue between healthcare practitioners/executives and academics on applying OM techniques to improve healthcare firm performance.

The conference will include a "research incubator" poster session for new or in-progress research projects. We hope that the poster session will serve to create new connections between people with similar interests.

We hope to see you there! For more details see <http://www.pomsmeetings.org/Confevents/015/>

To register for the conference, go to <https://secure.netsolhost.com/pomsmeetings.org/ConferenceWelcome.asp?ConfCode=017>

(Continued from page 8)

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## NEWS FROM POMS COLLEGES-MINI CONFERENCES



**College of Behavior in OM**  
Pauline Found  
Cardiff Business School  
[foundpa1@Cardiff.ac.uk](mailto:foundpa1@Cardiff.ac.uk)

**Bjorn Claes**  
Cranfield School of Mgt, England  
[bjorn.claes@cranfield.ac.uk](mailto:bjorn.claes@cranfield.ac.uk)



The POMS College of Behavior in Operations Management will be organizing a mini conference around the main POMS conference in Vancouver, BC, this year. This event consists of a pre-conference dinner including a prominent industry speaker on Thursday May 6th (18.00 to 21.30) and a post conference mini conference on Monday May 10th (14.00 to 16.45) consisting of a selection of outstanding speakers originating from industry and academia followed by a panel discussion. The aim of this conference is to exchange ideas about the contemporary behavioral issues in operations and supply chain management and to listen and learn from the insights and experiences of executives from leading companies with respect to this specific issue.

Further information on the mini-conference can be found at:  
<http://www.pomsmeetings.org/Confevents/015/PgView.aspx?itn=1>  
Register at : <https://secure.netsolhost.com/pomsmeetings.org/ConferenceWelcome.asp?ConfCode=019>



**College of Sustainable Operations**  
**Mini-Conference Co-Chairs**  
Atalay Atasu  
The Business School at Georgia Tech  
[atalay.atasu@mgt.gatech.edu](mailto:atalay.atasu@mgt.gatech.edu)

**Mike Galbreth**  
University of South Carolina  
[galbreth@moore.sc.edu](mailto:galbreth@moore.sc.edu)



Please join us for the 2nd Annual Mini-Conference of the POMS College of Sustainable Operations, to be held in Vancouver, BC, on May 6, the day before the POMS Annual Meeting.

The mini-conference will feature speakers and discussions on a wide variety of sustainability topics. We will hear from thought leaders from outside of the OM community such as Andrew Hoffman from strategy and Shmuel Oren from operations research/energy economics. Also planned are a session on the interface between product design and sustainability from Stelios Kavadias, and a field report on humanitarian logistics efforts underway in Africa and the Middle East by Alfonso Pedraza Martinez. We hope to have active industry participation, including a keynote from Burton Hamner, an experienced environmental consultant and entrepreneur.

Please feel free to contact us with any questions. We look forward to seeing you in Vancouver!

See the POMS webpage for details; register for the conference at:  
<https://secure.netsolhost.com/pomsmeetings.org/ConferenceWelcome.asp?ConfCode=018>



**College of Service Operations**  
**Mini-Conference**  
Rich Metters  
Emory University

The College will hold a one day meeting in Vancouver on Thursday, May 6 2010, the day prior to the main POMS meeting. Register at:

<https://secure.netsolhost.com/pomsmeetings.org/ConferenceWelcome.asp?ConfCode=016>

The meeting will be hosted at the beautiful facilities of the Segal Graduate School of Business at Simon Fraser University, a 10 minute walk from the conference hotel; see

<http://www.sfu.ca/mecs/segal+school/index.html>

The purpose of the meeting will be to hear from practitioners. We have eight scheduled speakers/experiences so far.

- Graham Kee, VP - Olympic Operations, Port of Vancouver.
  - Kate Dilworth, Director, Learning Strategies Group. Kate will speak to us about service design in healthcare.
  - Robert Safrata, CEO of Novex Couriers.
  - Mark Andrew, VP Pacific Northwest and General Mgr, Fairmont Hotels and Resorts. Rather than a traditional presentation, Mark and his executive team will be providing a "behind the scenes" look at hotel operations at the Fairmont - a 10 minute walk from our conference venue.
  - Michael Cassidy, GM Aramark Food Services / Vancouver Canucks hockey team.
  - Dr. Jim Spohrer, IBM, will update us on what is happening with "service science." IBM now has a broad global network of universities connected to service science curriculum, with opportunities for service operations faculty.
  - Dr. Stephen Tax, a well-known, well-published services marketing faculty, will speak to us on "Breaking Free from Services Marketing."
  - John deC. Evans, President, Trilogy Group of Hotels, OPUS Hotel Group.
- See you there!



**College of Product Innovation and Technology Mgt (PI&TM)**  
**POMS Conference Events**

Nitin Joglekar, PI&TM President  
Boston University

Jane Davies  
PI&TM Representative  
Cambridge, Judge Business School



The College of PI&TM will hold a special session at the POMS Vancouver meeting to honor a "yet to be announced" PI&TM award winner who, along with last year's winner (Cheryl Gaimon) will give "keynote" speeches. Tentatively,

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## 2010 Election Results

The following people have been elected to the 2010 Board.

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