RIGOR-MORTIS: THE KNOWING-DOING GAP IN RESEARCH METHODS AND WHAT WE SHOULD DO ABOUT IT

Panel

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Introduction

The knowledge base for conducting both qualitative and quantitative research in information systems (IS) is continually expanding, and novel tools are routinely emerging aimed at making the application of new techniques easy. This coevolution of knowledge and tools represents a bit of a quagmire for researchers: developing deep analytical expertise and maintaining it represents a huge time commitment; conversely, new analytical tools make it increasing easy to apply new techniques -- perhaps without fully understanding them. Some in our field have anecdotally noted that this proliferation of tools and methods has resulted in it becoming increasingly difficult to publish in our top journals without the inclusion of ever more complex analyses. Moreover, we are contributing to this problem through the proliferation of methodological papers in our top journals which reviewers seize upon, and authors are left trying to fully comply with techniques that are potentially neither easily understood nor necessary. This knowing-doing gap in research methods – i.e., the disconnect between our analytical know-how and know-why – may be especially problematic for students and new faculty who are trying to develop IS-domain expertise while simultaneously trying to master methods. As such our push for more complexity in methods may be contributing to our field “eat[ing] its young” (Robey, 2003, p. 355).

Generally speaking, IS researchers must be able to develop a research design that can both 1) assess the research questions proposed (we do this by tapping into deep knowledge of a theoretical domain); and 2) produce data that can be analyzed (we do this by tapping into broad knowledge of analytical techniques such that we appropriately match a technique to a research design, or perhaps more pragmatically to ensure we do not design a study and collect data that either cannot be analyzed and/or whose analysis will not address the research questions). Once the decision is made to apply a research design/analytical technique the researcher must delve deeply into the nature of the method, figuring out how to use the analytical technique appropriately and evaluate the results.

The ever-growing expectations for conducting analysis in IS research are hard to manage. New methods and refinements of existing methods are likely being developed as quickly or maybe even more quickly than domain-specific theory is being advanced resulting in researchers needing to maintain expertise in quite a number of areas (i.e., one or more theoretical domains and potentially many methodological ones). And, while such demands have likely been a routine part of faculty life, such demands are potentially shifting with the plethora of tools now available (often with simplified GUIs) making it easier to conduct virtually any sort of analysis, while it is potentially as difficult as ever to develop the necessary understanding of whether the analysis was accurately conducted and appropriately interpreted. Finally, the expectation that one possess such broad expertise is not confined to the research we conduct, but reviewer assignments often require more and more methodological expertise. And, without some level of analytical expertise in our reviewer pools, papers published (and/or not published) in our top journals will not represent the best work we can do.

This panel will focus on how/should our field be navigating this proliferation of methods in such a way as to simultaneously maintain our domain-specific expertise while also maintaining legitimacy/currency in methods. We have assembled expert panelists who have successfully navigated the methodological
requirements of publishing quantitative and qualitative research in our top journals. Panelists will discuss:

1. Have we gone too far in our methods expectations? Are we sacrificing relevance for rigor?
2. What should the expectations be? How do we meet those expectations (e.g., PhD education, continuing education, etc)?
3. How can/should methodological expertise be assembled and/or leveraged?

About the Panelists

Traci A. Carte is Associate Professor of Information Systems at the University of Oklahoma. She has served as a Track Chair (Research Methods) at ICIS 2007 and as an AE in 2006, 2010, and 2012. She served two terms as an AE at *MIS Quarterly* and currently serves on the editorial board at *JAIS*. Professor Carte’s research has been published in such journals as *Information Systems Research*, *MIS Quarterly*, *Journal of the AIS*, *Group Decision and Negotiation*, *Decision Support Systems*, *Database Advances*, and numerous national and international conference proceedings. Her research has been recognized by a best paper award at *MIS Quarterly* in 2002, at the America’s Conference on Information Systems in 2004, and a doctoral student award for excellence in research at the University of Georgia. In 2008 she served as a Fulbright Senior Fellow at the Postgraduate Institute of Management in Colombo Sri Lanka.

George A. Marcoulides is a Professor of Research Methods & Statistics in the Graduate School of Education and in the Interdepartmental Graduate Program in Management (IGPM) in the A. Gary Anderson Graduate School of Management at the University of California, Riverside. He was previously a Professor of Statistics in the Department of Information Systems and Decision Sciences at California State University, Fullerton. He has also been a visiting professor at the University of California- Los Angeles, the University of California-Irvine, the University of Geneva, and the University of London. He has served as a consultant to numerous government and state agencies, companies in the United States and abroad, and to various national and multi-national corporations. He has co-authored or co-edited 15 books and edited volumes. His research contributions have received Best Paper Awards from the Academy of Management, the Decision Sciences Institute, and the American Educational Research Association - University Council for Educational Administration. He is a Fellow of the American Educational Research Association, a Fellow of the Royal Statistical Society and a member of the Society of Multivariate Experimental Psychology. He is currently Editor of the journals *Structural Equation Modeling* and *Educational and Psychological Measurement*, Editor of the Quantitative Methodology Book Series, and on the editorial board of numerous other scholarly journals.

Wynne W. Chin is the World Class University Professor in the Department of Service Systems Management and Engineering at Sogang University and C. T. Bauer Professor of Decision and Information Sciences at the University of Houston. He received an AB, MS, MBA, and Ph.D degrees in Biophysics, Biomedical/Chemical Engineering, Business, and Computers and Information from U.C. Berkeley, Northwestern University, and the University of Michigan respectively. He is the developer of PLS-Graph, the first graphical based software dating back to 1990 to perform Partial Least Squares analysis and used by more than 8000 researchers worldwide. Wynne currently resides in Sugar Land, TX with his wife Kelly, his two daughters - Christina (23 years old) and Angela (18 years old) and his dog Rigor (35 dog years).

Dorothy E. Leidner, PhD is the Ferguson Professor of Information Systems at Baylor University. During the summers, she serves as a visiting professor at the University of Mannheim in Germany. She has over 50 refereed publications in such journals as *MIS Quarterly*, *Information Systems Research*, *Organization Science*, and *Journal of Management Information Systems*, among others. She has received numerous awards, including the *MIS Quarterly* Best Paper Award (1995), the Senior Scholar’s Best Publication Award (2007), the Journal of Strategic Information Systems Best Paper Honorable Mention Award (2009 and 2010), the *Decision Sciences Journal* Best Article Finalist (2008), the Academy of Management OCIS division best paper award (2000) a best track paper (1993) and runner-up best track paper (1999) from the HICCS conference, and the AIS Fellow award (2012). Dorothy served as AE and SE for MIS Quarterly from 2003-2009 and currently serves as senior editor for *MIS Quarterly Executive*. 
Panelists Views

George A. Marcoulides (Quantitative perspective)

Have we gone too far in our quantitative methods expectations? No, MIS journals have not gone too far, and MIS researchers are not currently qualified to use many of the methods they employ. There are many underappreciated, not well understood, and sometimes even incorrect methodological implementations that frequently appear in a variety of publication related settings. Many of these are particularly troublesome, especially when they appear from top-tiered substantively oriented journals (e.g., comments from journal editors, comments from reviewers, or published statements by authors). A major reason for this pervasive problem is the availability of simple-to-use computer programs that require little technical knowledge of the statistical models underpinning the utilized techniques.

A similar cause for concern was raised regarding the use of structural equation models in social science research by David A. Freedman in the Journal of Educational Statistics almost three decades ago. This is about the time I had completed my doctoral training in a Quantitative Methodology program at UCLA. The criticisms were vigorously debated by a number of scholars from a variety of backgrounds and points of view, but also included commentaries by two of my past professors; namely, Peter M. Bentler and Bengt O. Muthén. In their comments they highlighted the need for researchers to pay careful attention to the stochastic assumptions underlying the use of this advanced modeling technique and highlighted the necessity for better methodological education. Almost two decades later, with the problems still seemingly present in the field, James H. Steiger in a paper published in the Journal of the American Statistical Association compared entry into the practice of structural equation modeling akin to trying to merge onto a busy superhighway filled with large trucks and buses driving fast in reverse.

Unfortunately, and despite the fact that several decades have passed since these various calls, the demand for qualified methodological knowledge and instruction far outstrips the supply. To make things worse, many substantively oriented scholarly outlets that publish methodological pieces are often monitored by people who have published few if any technical articles in the methodological field. So how can any field ever remedy this problem and move ahead?

What should the expectations be? If anything they should be raised. Like my early mentors, I too believe that we need better methodological education! This can be accomplished through solid methodologically oriented programs at the graduate level, through post-doctoral training programs, and even through training workshops at professional meetings. I also believe that individuals involved with publication related matters (but particularly journal editors and reviewers) need to be more realistic about their level of expertise. When in doubt, perhaps seek out methodological experts.

How can/should methodological expertise be assembled and/or leveraged? I believe that technical papers related to methodological techniques should be restricted to methods journals where experts can ultimately evaluate the quality of the work.

Wynne W. Chin, (Quantitative perspective)
Have we gone too far in our quantitative methods expectations? Current journal requirements may be too high, but MIS researchers do need to be good applied statisticians. My broad introduction into multivariable analyses as applied in business and social science mainly occurred when I matriculated into the Computers and Information Systems doctoral program in 1983. Although not a statistician by training, my previous doctoral training in chemical engineering and undergraduate degree in biophysics provided me with sufficient background for my doctoral studies. As such, I enjoyed taking numerous quantitative courses beginning with a traditional graduate level introduction to probability and then statistics followed by other courses such as structural equation modeling, partial least squares, multidimensional scaling, cluster analysis, non-parametric statistics, etc. In fact, I took some topics more than once from other instructors out of a desire to obtain a deeper understanding. When I completed my degree, I naively assumed researchers in our discipline, let alone our editorial board members have similar background and understanding. By understanding, I’m not necessarily arguing the ability to develop new analytical techniques, but the ability to go beyond the syntactical know-how of operating a statistical package or following “prescriptive cookbook” procedures to the know-why and when a particular method is appropriate. Theoretical modeling and quantitative analytical techniques go hand in hand.

What should the expectations be? I believe an applied level of understanding is necessary for adequate theory development and design of empirical studies. Without such understanding, you are likely going to end up making requests that statisticians hate to hear – such as “what is the best way to analyze the data I have?”, “Is my sample size large enough to use method XXX?” or “Is there any other method that might work?” Further, it seems time to shore up our editorial boards and ensure access to good quality reviews even if it requires using external experts in the short term. Much more stringent criteria need to be set for those serving as reviewers. Even more critical thresholds should be set for those acting as AEs and SEs. Unless we have the requisite knowledge and skills, we ought not to be accepting such submissions. We need to ensure those reviewing new methodological submissions have similar qualifications (e.g., training and publication records) as those in the referent discipline. I believe our discipline can develop the necessary critical mass of skills in the future, but it requires better training at the doctoral level and continuing education via workshops at our conferences and other venues.

How can/should methodological expertise be assembled and/or leveraged? Certainly, new techniques can and should be introduced in our own journals, but it should only be considered if it is consistent with the type of research or data our discipline encounters. At present, it seems too many methodological papers are being submitted just for the sake of submission even though the topic would be better served if the manuscript were sent to more traditional statistical/quantitative outlets. To make things worse, I suggest that our discipline seems rather insular with those researchers interested in publishing analytical papers doing so more out of motivation than ability and rarely checking or collaborating with experts in the referent disciplines. I’ve been reluctant to act as a gatekeeper pointing out the many errors in recent published articles in our top journals. But, in recent years, such papers seem to be on the rise. The cause is likely due to both the lack of adequate methodological training of the authors and the editorial board. I’m concerned that these papers are being reviewed even though our editorial boards are simply ill-equipped to provide an appropriate evaluation.

Dorothy E. Leidner (both quantitative and qualitative perspective)

Have we gone too far in our methods expectations? Journal requirements for quantitative papers have gone too far. When I began my career as an assistant professor in 1992, I subscribed to and read every paper in full in every issue of MIS Quarterly, Information Systems Research, Journal of MIS and Organization Science. There came a point when my scrupulous reading became more cursory, particularly with regards to the methods section. There came a time when I found that I was no longer fully understanding the method sections and then I found myself barely reading any of the method sections at all, focusing most of my thoughtful reading on the introduction, theory, analysis and discussion. While my memory is decidedly biased, it seemed to me that method sections were growing longer, wordier and more laborious in the latter half of the 1990s, all in the spirit of being more rigorous, and the trend has yet to subside. When I did take the time to read a method section more in-depth, it typically was because the authors had done something very creative – had found a new way to gather data, or a new way to measure an important construct – rather than because the authors were conducting a new test or using a new tool. For me, the primary benefit of the method section was to provide a road map of
how things were done that could be emulated by other researchers. Yet the roadmaps were becoming ever more complex and I doubted my ability to keep up to date. A case in point was a sole-authored MIS Quarterly submission that I made in 1995. At the time, LISREL was just coming in vogue in the IS journals. I had conducted all of my analysis on my SPSS software residing on my Mac. My paper was invited for a major revision, but one of the comments of the SE was that I needed to redo the analysis in LISREL. I failed to find a compelling justification for his request, aside from LISREL being en vogue at the time. I purchased LISREL, although it did not run on my Mac. I had excellent intentions of having it installed on a Windows computer available for my use and learning it by reading the accompanying manual, but alas, other projects with less demanding revisions took my time, as did my coursework. I decided to withdraw the paper instead of learning LISREL. As an assistant professor in the 3rd year, should I have taken the time to self-learn a new analytical tool even if I had no reason to believe that it was going to change the outcomes of my analysis? In like fashion, if a new tool emerges next year replacing PLS, should we all learn it and rewrite our papers that use PLS? For the time being, it does seem that our field has stabilized around PLS, yet expectations continue to rise with regards to the proper tests to run: common method latent variable analysis; sensitivity analysis on the operationalization of the variables; common source bias tests; and so forth. Does everyone need to conduct every test? If so, do we need to fully understand what we are doing and why we are doing it, or should we simply follow reviewer/AE/SE recommendations and conduct certain tests in order to have our papers accepted? What should the expectations be? Method should be a facilitator of excellent research, not a constraint. My perspective is that we are becoming so fixated with method that we are losing our creative edge, the creative edge that sees a promising new research problem and jumps full force into understanding the problem wherein method is an important tool, but should not be a restriction, where improvisation during method is as important as pre-determination by method. Often, we are able to justify our choices after the fact using well accepted academic rhetoric drawing upon the names of method experts. We tend to observe what methods and tests are in vogue in related business disciplines, and then strive to apply these in our own. But must we excel at a specific method in order to contribute our discipline? I hope not. Otherwise, our research will become factory-like with the method-intensive programs producing method-perfect papers that few of us read and none of us will be researching the messy problems that do not fit perfectly into a world of perfect method.

How can/should methodological expertise be assembled and/or leveraged? I often see junior faculty who invest enormous amounts of effort into developing quantitative expertise benefit from this expertise by becoming “the method person” on many publications. In reality, they are only involved in the data analysis and write-up. They develop nice publication lists, but they have no stream of research to which their name is associated. Moreover, they run the risk of force-fitting theory to data, because their expertise lies with the data analysis, not the theory, and their role is to make the analysis support the theory. Yes, there are distinct advantages to being the method person on papers, but it carries some risk as well.

Michael D. Myers (qualitative perspective)

Have we gone too far in our qualitative methods expectations? No, we have not gone too far in our qualitative methods expectations. Some twenty years ago (or so) when I entered the field of information systems, I found that many qualitative papers were of poor quality (apart from a few notable exceptions). Coming from a background in anthropology and with expertise in ethnographic research, I was surprised to discover that most papers purporting to be qualitative were purely descriptive with apparently little or no deep understanding of the theoretical or methodological underpinnings of qualitative research. Given this situation I was not really surprised at the relatively low esteem within which qualitative research was held by most IS scholars. Hence I decided to devote a substantial part of my own career to providing what I considered to be a clearer set of guidelines or principles as to how various qualitative research methods should be conducted and assessed (adapted of course, for our own field). Of course, many other people have also contributed to this effort (I won’t name them all here), but I think the results are self-evident. Nowadays, all IS journals welcome qualitative research. Almost all the qualitative articles published in our top IS journals are of equivalent quality to articles published in the top journals of any of the other management disciplines such as management or marketing. I can’t tell the difference.
What should the expectations be? I agree with Dorothy that it is possible to become so fixated with method that we can lose that creative edge that is so important. One of the problems I have encountered many times is where junior scholars apply a particular method in a rigid way, and expect everyone else to follow their own rigidity. It is possible to apply a particular set of methodological guidelines inappropriately. For example, one reviewer of a recent paper in one of our top journals commented that 49 interviews was not enough for a case study. ‘There are only 49 members in this survey... I hope the authors can do more work here.’ This reviewer did not understand that having a certain ‘sample size’ is inappropriate for interpretive case study research. Therefore I entirely agree with Wynne that a certain level of understanding is necessary for adequate theory development and design of empirical studies. Qualitative researchers must have the requisite knowledge and skills if they are going conduct and/or evaluate good work.

How can/should methodological expertise be assembled and/or leveraged? I agree with George that we need better methodological education. Many doctoral programs have just one course on qualitative research methods and so this course almost inevitably focuses on the particular expertise of the instructor. Therefore I believe we need a more in-depth treatment of qualitative methods, although I realize that not everyone is suited to or wants to do this kind of work.

Conduct of the Panel

The chair will introduce the issue and opposing views will be presented by different panelists suggesting three courses of action: more thorough education at the doctoral level and beyond, better leveraging of expertise once developed, and potential editorial changes at our top journals. At this stage, the audience will be invited to participate in dialog. The chair will manage this interaction as well as pre-solicit the AISWorld distribution for issues and opinions in order to seed this discussion. Two consequential issues addressed by the panel during discussion include: “How do you maintain currency in quantitative methods and tools potentially even developing expertise? And, “Can you/should you push back against a reviewer panel asking for more and more tests or sophisticated techniques beyond what you believe your data analysis needs?” The chair will provide concluding remarks summarizing the discussion and providing some potential direction forward.

Participation Statement

All participants have made a commitment to attend the conference and serve on the panel if the panel is accepted

References