

COLLEGE OF INFORMATION SCIENCE & TECHNOLOGY

University of Nebraska at Omaha

Last revised: August 1st, 2013

Doctoral Seminar:

**METHODOLOGICAL AND PHILOSOPHICAL FOUNDATIONS OF
INFORMATION TECHNOLOGY RESEARCH**

(Current Number/Title: ISQA 9010 - Foundations of IS Research)

Course Syllabus¹

Semester: Fall 2013. Classroom: PKI 172C; Meeting Time: TR 11:00am to 12:15pm

Professor: Dr. Deepak Khazanchi; Office: PKI 172D. Phone/Voice: (402) 554-2029.

Consultation Hours: By appointment only. E-mail: khazanchi@unomaha.edu

COURSE DESCRIPTION

Overview of content and purpose of the course: The purpose of the course is to provide students with an understanding of the methodological and philosophical foundations of information technology research. The course covers the following areas: (1) information systems/technology and computing as an academic discipline including classic readings from reference disciplines, (2) philosophical and scientific foundations of science and IT research, (3) theory development and evaluation, and (3) a comprehensive survey of research methods and their applicability in the various IT research domains. Specific topics will include: philosophical issues in IS/T research, paradigms in IS/T research, conceptual development and validation, scientific inquiry and approaches, laboratory research, case study, interpretive studies (grounded research), field studies, survey research, action research, meta-analysis, simulation, AI and expert system research methods, research validation, and selected data analysis techniques.

For whom course is intended: The course is intended for doctoral students in Information Technology or related areas. Advanced graduate students and students from other doctoral programs may find the course relevant.

Prerequisites of the course: Doctoral student standing in the information technology area or permission of the instructor. An introductory understanding of “research methods” in business and scientific disciplines is essential. (The first class session will focus on a review of this basic material.)

Objectives: Upon completion of the seminar, students should be able to:

- Understand IT and its roots as an academic discipline and its relationship to reference disciplines
- Recognize and appreciate the classic articles, theories, frameworks, and themes in IT research
- Understand the nature of scientific research in general and the place of IT research within that context
- Understand the development, evaluation and validation of theory and concepts
- Understand the range of relevant research methods for IT research
- Understand how to choose an appropriate research method for a specific IT study

¹ The syllabus is subject to change as announced in class.

- Appreciate the tradeoffs and challenges that are inherent in IT research
- Appreciate the ethical and legal issues involved in scientific research, particularly human subjects research

COURSE PEDAGOGY AND REQUIREMENTS

Pedagogical Method(s): The course uses a discussion-based learning approach and relies heavily on interaction between the student and professor as well as among students. The instructor plays a mentoring and facilitating role.

Student role in the course: The student participates in class discussion, serves as a lead discussant when assigned, completes written assignments and papers, and writes a comprehensive final paper. *Because this is a “research methods” doctoral seminar, preparation for and participation in discussions in class meetings is absolutely essential.*

Instructional Materials:

No specific textbooks will be used, although specific books may be made available on reserve or through the instructor for review by students. The course consists entirely of a list of required and supplemental (optional) readings. Readings will be updated as appropriate, to reflect new developments in the fields that encompass the IT academic disciplines.

Course Assignments and Submission Guidelines:

Class Participation: All students are required to **read each article** for the meeting and prepare a brief outline or “**reading note**” of the articles assigned for a meeting session. A one or two paragraph synthesis of the topic and a brief summary of each reading should be sufficient (see guidelines below). These outlines should identify the strengths and weaknesses of the research method and its application to IT research. Based on these, a final report comparing and contrasting the various research methods covered in the seminar will be required (see guidelines below). In the first few weeks, you will be required to prepare a reading note for all articles assigned for each session. Subsequently, each student will continue to prepare reading notes, but the brunt of the effort will be that of the **lead discussant** assigned by the instructor to readings. Please be prepared to share a copy of your assigned analysis with the other students when it is due.

Guidelines for Reading Notes: In general, your notes should be brief and address only the major points of an article or chapter. The idea is to convey the overall form and contribution of the material in one to two pages of text. Since this particular seminar is focused on different research approaches in IT, this analysis should identify the strengths and weaknesses of the research approach or method (even for conceptual papers) used in a paper and its application to IT research. Use the “miscellaneous” section to make any evaluative comments you feel need to be stated. If you do not have adequate background in a specific research approach, it is always useful to tie your analysis with readings from other sources. The following format is recommended:

- **Summary:** A concise summary of the research critique.
- **Statement of the Research Problem and Purpose:** Describe the problem as visualized by the authors, the motivation for researching the problem, and the importance of the topic to the IT profession.
- **Underlying theoretical model(s) used by the authors (if any):** Briefly summarize the conceptual basis of the research study (previously reported models, concepts, and research studies).

- **Description of the Research Procedures (if applicable):** What is the overall research method used by the researchers? Is a research model proposed? How do the authors propose to test their model and/or hypothesis? Is the research design and/or experimental design sound? Are there any flaws in the research design? If the reviewed article or chapter is purely theoretical such as in the case of comprehensive literature review or conceptual development piece, describe the concepts/theories/frameworks and the process of arriving at conclusions.
- **Data Analysis:** Provide a summary of the data analysis in your own words. Assess the soundness of the data analysis? Describe any flaws and deficiencies in the data analysis. Assess the soundness of the interpretation of data analysis. If the reviewed article or chapter is purely theoretical such as in the case of comprehensive literature review or conceptual development piece, be sure to analyze the validity of concepts/theories/frameworks and the logical coherence of the process used to arrive at conclusions.
- **Conclusions:** Describe the major findings, implications, and conclusions. Are the conclusions justified given the research design adopted and research procedures followed? Have the limitations been correctly recognized and addressed? Assess the soundness of the implications (as described by the authors) of this research for research and practice.
- **Researcher Reputation:** Assess the reputation of the researcher(s) given the information in the journal.
- **Miscellaneous notes:** Are there any other thoughts or comments you have on this and related work you have read?

Leadership of class discussion: When leading a discussion, a student will be required to do a substantive and in-depth analysis of the research articles in the specific section, particularly relating to a specific category of research method. Useful reference books and text books relating to a specific research method or approach are available in the library, via amazon.com and through the instructor for use in preparing and leading a discussion. Specific readings will be assigned to students in the class.

Short Essays: Each student will write **two** short essays. These “**think pieces**” are to be no more than three (3) single-space pages in length and are intended to encourage you to critically evaluate the assigned readings. Your essay may analyze a single article, or preferably, several or even all of the articles assigned for a given meeting. In your readings, look for themes, problems, opportunities, and nuggets of wisdom. Feel free to draw on your educational background, your professional experience, and your intuition. In your writing, you may take any perspective you feel is appropriate. I want to know what you are thinking as you read and assimilate the material in the course. Your essays will be graded on their ability to communicate thoughtful and relevant ideas in a clear and cogent manner. Of course appropriate citations need to be provided as relevant.

Book Report: Each student will write a **book report**. The book report will be no more than five (5) single-space pages in length. The goal of the report is to critically and thoughtfully summarize and integrate the ideas presented in the book of your choice with readings and ideas discussed in class. In addition, you will be asked to communicate your summary to the rest of the class in an informal presentation. The time allotted for your presentation is a minimum of 20 and a maximum of 30 minutes including discussion.

Final Comprehensive Research Paper: A doctoral seminar also requires active participation in research. Each student (**or a small group of students**) will be required to develop a research paper that applies one or more research methods to a specific research problem in the IT field. Students will select topics in consultation with the instructor. Frequent progress reports throughout the semester and a completed manuscript at the end of the term will be required. The essential parts of the research paper for this class should follow the guidelines for a dissertation proposal and may include the following sections:

- Problem, hypothesis, or question
- Significant prior research

- Theory, framework, hypotheses (why it is worthy of doctoral research)
- Possible research approach or methodology
- Potential outcomes of research and importance of each

To ensure that every student will submit a passing paper, students must seek feedback on their early draft from the professor. A one page overview using the previous sections and a two page outline of the research paper is due in approximately 8 weeks from the start of the class. First drafts of completed papers are due in the 12th week. Early drafts will not be graded; however, feedback will be provided. An early draft is a not an outline, rather it is a full paper. The research paper should follow the “research paper guidelines” available separately from the instructor. A final paper will be due by the end of the semester. A good quality paper will need to at a minimum be of a quality that is required of good peer-reviewed conferences. If the student so desires, with some additional work after the semester (in the spring and/or summer) in close collaboration with the instructor, it is expected that the paper would be of quality accepted in IT research conferences such as AMCIS, ECIS, ICIS, ACM, IEEE, SIGCPR, WITS, SIGITPRJMT, SIGHCI, HICSS, etc.

General Evaluation Guidelines: Grades will conform to the degree to which each of the requirements stressed in class and this syllabus are met in the various assignments and final paper. To be eligible for a passing grade in the class, a student must complete all course requirements including, in-class assignments, homework, discussions, book report, and the research paper by their deadlines and to the satisfaction of the instructor. *Students are fully responsible for learning the content of this course and for material disseminated in the class. You are not released from this responsibility because of absences. Therefore, the instructor may lower a student's final grade because of excessive absences. Please adhere to deadlines.* All work is to be accomplished on an individual basis unless otherwise specified. In case of exigencies, students are advised to inform the instructor at least a week before a due date. Plagiarism and/or cheating (“a student who uses a dishonest or deceitful means to obtain a grade is guilty of cheating; a student who submits another’s work as one's own without adequate attribution is guilty of plagiarism”) will be penalized with a failing grade per policies established in the Student Handbook.

Grading: The final grade is determined by using the following weights.

- Class Participation – 20%
- Leadership of class discussion (as assigned) – 10%
- Short Essays (2) – 20%
- Book report – 15%
- Final comprehensive paper (expected to be submitted to a conference or journal) – 35%

A word on evaluation of each category: A letter grade will be given for all submissions. In general, papers will be evaluated on the basis of currency of topic, application and integration of course concepts, organization of paper, thoroughness and quality of analysis, spelling and grammar, and originality of analysis. In addition, students will earn higher grades for successfully integrating information from additional sources and/or related articles. Grades for **class participation and discussion** will reflect the Instructor's perception of student **quality** and **quantity** of inputs to class learning (e.g., article preparation, research notes, read/discuss supplemental readings, etc.).

Grading scale and criteria:

The final grade is based on the percentage of points that the student receives out of the total possible points for the course. The guaranteed grade scale is shown in the following table.

GRADE	POINT VALUE
A	92% < x % < 100%
A-	89% < x < 92%
B+	86% < x < 89%
B	82% < x < 86%
B-	79% < x < 82%
C+	76% < x < 79%
C	72% < x < 76%
C-	69% < x < 72%
D+	66% < x < 69%
D	62% < x < 66%
D-	59% < x < 62%
F	Less than 59%

OVERVIEW OF SEMINAR AND TENTATIVE SCHEDULE

- I. Fundamental Concepts and Frameworks (Week 1 & 2 – 8/24 & 8/26; 8/31 & 9/2)
- II. Philosophy of Science and Social Science (Week 3 & 4 – 9/7 & 9/9; 9/14 & 9/16)
- III. Theory Building and Testing (Week 5 – 9/21 & 9/23)
- IV. Overview of Research Methods and Tradeoffs (Week 6 – 9/28 & 9/30)
- V. Experimentation (Week 5 – 10/5 & 10/7)
 - a. #1 Short Essay is due (Week 5 – **10/7**)
- VI. Laboratory Research (Week 7 – 10/12 & 10/14)
- VII. Field Studies & Experiments (Week 8 – 10/19 & 10/21)
- VIII. Survey Research (Week 9 – 10/26 & 10/28)
- IX. Case Research (Week 10 – 11/2 & 11/4)
 - a. # 2 Short Essay is due (Week 10 – **11/4**)
- X. Action Research (Week 11 – 11/9 & 11/11)
- XI. Meta Analysis (Week 12 – 11/16 & 11/18)
- XII. AI & Expert Systems Research Methods (Week 13 – 11/23 & 11/25)
- XIII. Research Validation (Week 14 – 11/30 & 12/2)
- XIV. Additional Tools and Techniques (e.g., Simulation, LISREL, Design Science, etc.) (Week 15 – 12/7 & 12/9)
 - a. **Research method book reports and presentation due as assigned (12/14 & 12/9)**
- XV. Ethical and Legal Issues in Research with Human Subjects (PS: This material may have already been covered in introductory CIST 90xx colloquia on teaching and research and is here for your information just-in-case you have not seen it before)

- a. Final papers due via e-mail and short individual paper presentation during finals week (12/14 & 12/16)
- XVI. Writing and Publishing: From dissertation to tenure and beyond (PS: This material may have already been covered in introductory CIST 90xx colloquia on teaching and research and is here for your information just-in-case you need it)

READINGS

O. Introduction and Background Concepts (Week 1)

- O.1 Khazanchi, D. "Methodological and philosophical foundations of information systems/computer science research" [PowerPoint presentation -- handout].
- O.2 Khazanchi, D. "Philosophical Concepts and Issues in IT Research" [PowerPoint presentation -- handout].
- O.3 Khazanchi, D. "Conceptual Validation" {PowerPoint presentation – handout}

I. Fundamental Concepts and Frameworks (Week 1 and 2)

- I.0 Wing, J. M. 2008. Five deep questions in computing. *Commun. ACM* 51, 1 (Jan. 2008), 58-60.
- I.1. Wegner, Peter (1976, October). "Research paradigms in computer science". *Proceedings of the 2nd international conference on Software engineering ICSE '76*, Publisher: IEEE Computer Society Press.
- I.2. Ives, B., Hamilton, S., and Davis, G.B. "A Framework for Research in Computer-Based Management Information Systems," *Management Science*, Volume 26, Number 9, September 1980, pp. 910-934.
- I.3. Lyytinen, K., "Different Perspectives on Information Systems: Problems and Solutions," *ACM Computing Surveys*, Volume 19, Number 1, March 1987, pp. 5-46.
- I.4. Daft, R. L., R. H. Lengel, et al. (1987). "Message Equivocality, Media Selection, and Manager Performance: Implications for Information Systems." *MIS Quarterly* 11(3): 354.
- I.5. Orlikowski, W.J. "The Duality of Technology: Rethinking the Concept of Technology in Organizations," *Organization Science*, Volume 3, Number 3, 1992, 398-427.
- I.6. Alavi, M., and Carlson, P., "A Review of MIS Research and Disciplinary Development," *Journal of Management Information Systems*, Volume 8, Number 4, Spring 1992, pp. 45-62.
- I.7. Brynjolfsson, E. (1993). "The Productivity Paradox of Information Technology." *Communications of the ACM* 36(12): 66 - 77.
- I.8. Francisco J. Mata; William L. Fuerst; Jay B. Barney "Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis (in Theory and Research)" *MIS Quarterly*, Vol. 19, No. 4. (Dec., 1995), pp. 487-505. Stable URL: <http://links.jstor.org/sici?sici=0276-7783%28199512%2919%3A4%3C487%3AITASCA%3E2.0.CO%3B2-%23>
 - Resourced Based Theory of the Firm URL: http://www.valuebasedmanagement.net/methods_barney_resource_based_view_firm.html
 - <http://www.istheory.yorku.ca/rbv.htm>
- I.9. Brynjolfsson, E. (1996). "Paradox Lost? Firm-Level Evidence of on the returns to Information Systems spending." *Management Science* 42(4): 541, 18.
- I.10. Loui, M. C. 1996. Strategic directions in research in theory of computing. *ACM Comput. Surv.* 28, 4 (Dec. 1996), 575-590. DOI= <http://doi.acm.org/10.1145/242223.242240>.
- I.11. Lee, B., Barua, A., and Whinston, A.B. "Discovery and Representation of Causal Relationships in MIS Research: A Methodological Framework," *MIS Quarterly*, Volume 21, No.1, March 1997, pp. 109-136.

- I.12. Gregg, D. G. and U.R. Kulkarni (2001). "Understanding the Philosophical Underpinnings of Software Engineering Research in Information Sciences." *Information Systems Frontiers* 3(2): 169-183.
- I.13. Denning, P. J. (2003). Great principles of computing. *Communications of the ACM* 46, 11 (Nov. 2003), 15-20. DOI= <http://doi.acm.org/10.1145/948383.948400>.
- I.14. Glass, R. L., Ramesh, V., and Vessey, I. 2004. An analysis of research in computing disciplines. *Communications of the ACM* 47, 6 (Jun. 2004), 89-94. DOI= <http://doi.acm.org/10.1145/990680.990686>.

Additional References:

- Robert N. Anthony (1965). *Planning and Control Systems: A Framework for Analysis* (1965).. Graduate School of Business, Harvard University.
- Ackoff, R.L. "Management Misinformation Systems," *Management Science*, Volume 14, Number 4, December 1967, pp. B147-B156.
- Rappaport, A. "Management Misinformation Systems: Another Perspective," *Management Science*, Volume 15, Number 4, December 1968, pp. B133-136.
- Dearden, J. "MIS is a Mirage," *Harvard Business Review*, January-February 1972, pp. 90-99.
- Emery, J.C., and Sprague, C.R. "MIS: Mirage or Misconception?" *Harvard Business Review*, Volume 50, Number 3, May-June 1972, pp. 22-23.
- Dickson, G.W. "Management Information Systems: Evolution and Status," *Advances in Computers*, Volume 20, 1981, pp. 2-37.
- Nicholas G. Carr, "IT Doesn't Matter" *Harvard Business Review*, May 2003, pp 41 – 49.
- Maiden. N and Rugg, G., "ACRE: Selecting Methods for Requirements Acquisition, *Software Engineering Journal*," 11(3), May 1996.

II. Philosophy of Science and Social Science (Week 3 & 4)

- II.1. "The Philosophy of Computer Science" *Stanford Encyclopedia of Philosophy*. URL: <http://plato.stanford.edu/entries/computer-science/>.
- Bill Rapaport. "Philosophy of Computer Science: What I Think It Is, What I Teach, & How I Teach It." Herbert A. Simon Keynote Address, NA-CAP 2006 [[Vi`deo](#); URL: http://www.hass.rpi.edu/streaming/conferences/cap2006/nacp_8_11_2006_9_1010.asx].
- II.2. [A] Denning, P. et al. "Computing As a Discipline," *CACM*, Vol. 32, No. 1, 1989, pp. 9-23.
 [B] Denning, P. J. (2005). Is Computer Science Science? *Communication of the ACM* 48, 4 (Apr. 2005), 27-31. DOI= <http://doi.acm.org/10.1145/1053291.1053309>.
- G. Johnson (2001). "The World: In Silica Fertilization; All Science Is Computer Science", *NY Times* (<http://query.nytimes.com/gst/fullpage.html?res=9E02E6DD123CF936A1>).
- II.3. Lee, A. S., "Integrating Positivist and Interpretive Approaches to Organizational Research," *Organization Science*, Volume 2, Number 4, 1991, pp. 342-365.
- II.4. Hunt, S. (1993). "Objectivity in Marketing Theory and Research," *Journal of Marketing*, Vol. 57, April 1993, pp. 76-91.
- II.5. Hunt, S. D. "A Realist Theory of Empirical Testing Resolving the Theory-Ladenness/Objectivity Debate," *Philosophy of Social Sciences*, Vol. 24, No. 2, June 1994, pp133-158.
- II.6. Hunt, S.D. "On the Rhetoric of Qualitative Methods--Toward Historically Informed Argumentation in Management Inquiry," *Journal of Management Inquiry*, Vol. 3, No.3, Sept. 1994, pp. 221-233.

- II.7. Iivari, J., R., Hirschheim, et al. "A Paradigmatic Analysis Contrasting Information Systems Development Approaches and Methodologies." *Information Systems Research* 9(2), 1998, pp. 164-193.
- II.8. Khazanchi, D. and Munkvold, B.E. (2000) "Is information systems a science? An inquiry into the nature of the information systems discipline." *The DATA BASE for Advances in Information Systems*, Volume 31, Issue 3, Summer, pp. 26-44.

Additional References Books and Articles:

- Floridi, L. (2008). "Artificial Intelligence's New Frontier: Artificial Companions and the Fourth Revolution," *Metaphilosophy*, 39.4/5, 651-655.
- Hunt, S. D. (1992). "For Reason and Realism in Marketing" *Journal of Marketing*. Chicago: Apr 1992. Vol. 56, Iss. 2; pg. 89, 14 pgs.
- Churchman, C. West. *The Design of Inquiring Systems: Basic Concepts of Systems and Organization*. Basic Books, Inc., NY, 1971.
- Banville, C. and Landry, M. "Can the Field of MIS be Disciplined?" *CACM*, Vol. 32, No. 1, 1989, pp. 48-61.
- Nagel, Ernest (1979). *The Structure of Science--The Problems in the Logic of Scientific Explanation*, Hackett Publishing Co., Indianapolis. Chapters: 1, 2, 3, 13, and 14.
- McGrath, J.E., Martin, J., and Kulka, R.A. *Judgment Calls in Research*, Sage Publications, Beverly Hills CA, 1982.
- Dromey, R. G. (1982). *How to Solve It by Computer*, Prentice-Hall International Series in Computer Science (ISBN: 0134340019).
- Guba, E. G. & Y. S. Lincoln, (1994), *Competing paradigms in qualitative research*. In: N. K. Denzin & Y. S. Lincoln, editors. *Handbook of Qualitative Research*, Sage Publications, Thousand Oaks, CA.
- Kuhn, T.S. *The Structure of Scientific Revolutions*, 3rd ed., University of Chicago Press, Chicago IL, 1996. [AVAILABLE FROM Dr. Khazanchi OR UNO LIBRARY].
- *Resource on Programming Paradigms*: http://en.wikipedia.org/wiki/Programming_paradigms.
- *Resource on the Philosophy of Computing and Informatics*: <http://www.idt.mdh.se/~gdc/PI-network-goals.htm>.

III. Theory Building and Testing (Week 5)

- III.1. Ackoff, R. *Scientific Method*, Wiley, New York, 1962, Chapter 1: The Nature of Science and Methodology, pp. 1-29.
- III.2. Christenson, C., "Proposals for a Program of Empirical Research into the Properties of Triangles," *Decision Sciences*, October 1976, pp. 631-648.
- III.3. Dubin, Robert, "Theory Building in Applied Areas," in Dennette, M. (Ed.) *Handbook of Industrial and Organizational Psychology*, Rand McNally College Publishing Company, Chicago, Illinois, 1976, pp. 17-39.
- III.4. Whetten, D.A., "What Constitutes a Theoretical Contribution," *Academy of Management Review*, Volume 14, Number 4, 1989, pp. 490-495.
- III.5. Weick, K.E., "Theory Construction as Disciplined Imagination," *Academy of Management Review*, Volume 14, Number 4, 1989, pp. 516-531.
- III.6. Weick, K.E., "What theory is not, theorizing is", *Administrative Science Quarterly*; Sep 1995, 40, 3. p. 385.

- III.7. Aho, A. V., Johnson, D. S., Karp, R. M., Kosaraju, S. R., McGeoch, C. C., Papadimitriou, C. H., and Pevzner, P. 1997. *Emerging opportunities for theoretical computer science*. *SIGACT News* 28, 3 (Sep. 1997), 65-74. DOI= <http://doi.acm.org/10.1145/262301.262309>.

References Books/Articles:

- Loui, M.C. et al. (1996). "Strategic directions in research in theory of computing". *ACM Computing Surveys*, 28(4), pp. 575–590.
- Dewey, J. *How We Think*, Boston: D. C. Heath & Co., 1910 (1933 reprint).
- Rashevsky, N. "Is the concept of an organism as a machine a useful one?" in: Frank, P.G. (Editor), *The validation of scientific theories*, Boston, MA: The Beacon Press, 1954 (1956 reprint).
- Kaplan, A. *The conduct of inquiry*, Scranton, PA: Chandler Publ. Co., 1964.
- Rigby, P.R. *Conceptual foundations of business research*, New York, NY: John Wiley & Sons, Inc. 1965.
- List of Important CS publications:
http://en.wikipedia.org/wiki/List_of_important_publications_in_computer_science.

IV. Overview of Research Methods and Tradeoffs (Week 6)

- IV.1. Davis, M.S., "That's Interesting! Towards a Phenomenology of Sociology and a Sociology of Phenomenology," *Philosophy of the Social Sciences*, Volume 1, 1971, pp. 309-344.
<http://www.mang.canterbury.ac.nz/courseinfo/AcademicWriting/Interesting.htm>.
- IV.2. Jick, T.D., "Mixing Qualitative and Quantitative Methods: Triangulation in Action," *Administrative Science Quarterly*, Volume 24, December 1979, pp. 602-611.
- IV.3. Weick, K.E., "Theoretical Assumptions and Research Methodology Selection," in McFarlan, F.W. (Ed.), *The Information Systems Research Challenge*, Boston, Massachusetts: Harvard Business School Press, 1984, pp. 111-132.
- IV.4. Galliers, R.D., and Land, F.F., "Choosing Appropriate Information Systems Research Methodologies," *Communications of the ACM*, Volume 30, Number 11, November 1987, 900-902, plus follow-up technical correspondence in Volume 31, Number 12, December 1988, pp. 1502-1505.
- IV.5. Kaplan, B., and Duchon, D. "Combining Qualitative and Quantitative Methods in Information Systems Research," *MIS Quarterly*, Volume 12, Number 4, December 1988, pp. 571-586.
- IV.6. Introna, L. D. and Whitley, E. A. (1997). "Imagine: Thought Experiments in Information Systems Research". *Proceedings of the IFIP TC8 WG 8.2 international conference on Information systems and qualitative research*, pp. 481 – 496.
- IV.7. Benbasat, I. and Zmud, R. W. Empirical Research in Information Systems: The Practice of Relevance, *Management Information Systems Quarterly*, Volume 23, No. 1, March 1999, 3-16.
- IV.8. Carte, T. and C. Russel (2003). "In Pursuit of Moderation: Nine Common errors and their Solutions." *MIS Quarterly* 27(3): 479 (24 pp.).
- IV.9. Suddaby, R. (2006). "What Grounded Theory is Not", (Editorial). *The Academy of Management Journal*, pp. 633-642.
- IV.10. Holz, H. J., Applin, A., Haberman, B., Joyce, D., Purchase, H., and Reed, C. 2006. "Research methods in computing: what are they, and how should we teach them?" In *Working Group Reports on ITiCSE on innovation and Technology in Computer Science Education* (Bologna, Italy, June 26 - 28, 2006). ITiCSE-WGR '06. ACM Press, New York, NY, 96-114. DOI= <http://doi.acm.org/10.1145/1189215.1189180>.

Reference Books:

- Glaser, B.G. and Strauss, A.L. The Discovery of Grounded Theory: Strategies for Qualitative Research, Aldine de Gruyter, 1967.
- Patton, M. Q. (1990). Qualitative Evaluation and Research Methods. Sage Publications, Newbury Park, 3rd Edition.
- Denzin, N. K. and Y. S. Lincoln (1994). Handbook of Qualitative Research. Thousand Oaks California, Sage Systems Practice (1996) Vol 9 No. 2 (Whole issue).

V. Experimentation (Week 7)

- V.1. Newell, A. and Simon, H. A. "Computer Science as Empirical Inquiry: Symbols and Search," CACM, Vol. 19, No. 3, 1976, pp. 113-126.
- V.2. Cook, T.D. and Campbell, D.T., Quasi-Experimentation: Design and Analysis Issues for Field Settings, Boston, MA: Houghton Mifflin Co., 1979, Chapter 2, pp. 37-94.
- V.3. Simon, J. and Burstein, P. Basic Research Methods in Social Science, 3rd ed., New York: Random House, 1985, pp. 51-57, 81-106, 126-138.
- V.4. Jarvenpaa, S.L., Dickson, G.W., and DeSanctis, G., "Methodological Issues in Experimental IS Research: Experiences and Recommendations," MIS Quarterly, Volume 9, Number 2, June 1985, pp. 141-156.
- V.5. DE SANCTIS, G. (1989) Small group research in information systems: theory and method, in BENBASAT, I. (ed.): The information systems research challenge: survey research methods. Harvard Business School Research Colloquium, v.2, Harvard Business School, Boston, p.53-82.
- V.6. Zmud, R.W., Olson, M.H. & Hauser, R. (1989) Field experimentation in MIS research, in BENBASAT, I. (ed.): The information systems research challenge: survey research methods. Harvard Business School Research Colloquium, v.2, Harvard Business School, Boston, p.97-111.
- V.7. Johnson, D.S. "A Theoretician's Guide to the Experimental Analysis of Algorithms." To appear in Proceedings of the 5th and 6th DIMACS Implementation Challenges, M. Goldwasser, D. S. Johnson, and C. C. McGeoch, Editors, American Mathematical Society, Providence, 2002. [Also at URL: <http://www.research.att.com/~dsj/papers/experguide.ps>].

References Books:

- Campbell, D. and Stanley, J. Experimental and Quasi-Experimental Designs and Research, Rand McNally, 1963. [AVAILABLE FROM Dr. Khazanchi].

VI. IS Laboratory Research (Week 8)

- VI.1. Benbasat, I. and Dexter, A. "An Experimental Evaluation of Graphical and Color-Enhanced Information Presentation," Management Science, Vol. 31, No. 11, 1985, pp. 1348-1364.
- VI.2. Sharda, R. et al. "Decision Support System Effectiveness: A Review and an Empirical Test," Management Science, Vol. 34, No. 2, 1988, pp. 139-159.
- VI.3. BENBASAT, I. (1989) Laboratory experiments in information systems studies with a focus on individuals: a critical appraisal, in BENBASAT, I. (ed.): The information systems research challenge: survey research methods. Harvard Business School Research Colloquium, v.2, Harvard Business School, Boston, p.33-47.]

- VI.4. Baroudi, J.J., and Orlikowski, W.J. "The Problem of Statistical Power in MIS Research," *MIS Quarterly*, Volume 13, Number 2, March 1989, pp. 87-106.
- VI.5. Fjermestad, J. and Hiltz, S.R., "An Assessment of Group Support Systems Experimental Research: Methodology and Results," *Journal of Management Information Systems*, Vol. 15, No. 3, 1998-1999, pp. 7-149. [ALL – Skim for the essential conclusions]

VII. Field Studies and Experiments (Week 9)

- VII.1. Kerlinger, F. Foundations of Behavioral Research, 3rd ed., New York: Holt, Rinehart and Winston, 1986, pp. 364-376. (Topic: Field Study and Field Experiments)
- VII.2. MASON, R. (1989a) MIS experiments: a pragmatic perspective, in BENBASAT, I. (ed.): *The information systems research challenge: survey research methods*. Harvard Business School Research Colloquium, v.2, Harvard Business School, Boston, p.3-20.
- VII.3. MASON, R. (1989b) MIS experiments: a pragmatic evaluation, in BENBASAT, I. (ed.): *The information systems research challenge: survey research methods*. Harvard Business School Research Colloquium, v.2, Harvard Business School, Boston, p.21-29.
- VII.4. Zmud, R., Olson, M. and Hauser, R. "Field Experimentation in MIS Research," *Harvard Business School Research Colloquium*, 1989, pp. 97-111.
- VII.5. Klein, H.K., and Myers, M.D. "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," *MIS Quarterly* March 1999 23, 1, p67.
- VII.6. Venkatesh, V., and Davis, F.D. "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science* (46:2), Feb. 2000, pp. 186-204.
- VII.7. Jarvenpaa, Sirkka L., Gary W. Dickson and Gerardine DeSanctis. "Methodological Issues in Experimental IS Research: Experiences and Recommendations", *MIS Quarterly*, Vol. 9, No. 2. (Jun., 1985), pp. 141-156.

VIII. Survey Research (Week 10)

- VIII.1. Simon, J. and Burstein, P. Basic Research Methods in Social Science, 3rd ed., New York: Random House, 1985, pp. 107-125, 165-183. []
- VIII.2. Kerlinger, F. Foundations of Behavioral Research, 3rd ed., New York: Holt, Rinehart and Winston, 1986, pp. 377-388, 391-432.
- VIII.3. LUCAS JR., H.C. (1990) Methodological issues in information systems survey research, in KRAEMER, K.I. (ed.): *The information systems research challenge: survey research methods*, Harvard Business School Research Colloquium, v.3, Harvard Business School, Boston, p. 273-296.
- VIII.4. Moore, G., and Benbasat, I. "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Information Systems Research* (2:3), 1991, pp. 192-222.
- VIII.5. ZMUD, R.W. BOYNTON, A.C. (1991) Survey measures and instruments in MIS: inventory and appraisal, in KRAEMER, K.L. (ed.): *The information systems research challenge: survey research methods*. Harvard Business School Research Colloquium, v.3, Harvard Business School, Boston, p.149-180.
- VIII.6. Pinsonneault, A. and Kraemer, K.L. "Survey Research Methodology in Management Information Systems: An Assessment," *Journal of Management of Information Systems* (10:2), 1993, pp. 75-105.
- VIII.7. Newsted, P., Huff, S., and Munro, M. "Survey Instruments in IS," *MISQ Discovery*, December 1998, <http://misq.org/discovery/surveys98/surveys.html>. [ALL]

IX. Case Research (Week 11)

- IX.1. Markus, M.L. "Power, Politics and MIS Implementation," *Communications of the ACM*, 26, 1983, pp. 430-444.
- IX.2. Benbasat, I. Goldstein, D. and Mead, M. "The Case Research Strategy in Studies of Information Systems," *MISQ*, Vol. 11, No. 3, 1987, 369-386.
- IX.3. Lee, A. "A Scientific Methodology for MIS Case Studies," *MISQ*, Vol. 13, No. 1, 1989, pp. 33-50.
- IX.4. Orlikowski, W.J. & Baroudi, J.J. "Studying Information Technology in Organizations: Research Approaches and Assumptions", *Information Systems Research* (2) 1991, pp. 1-28.
- IX.5. Larsson, R. (1993). Case Survey Methodology: Quantitative Analysis of Patterns across Case Studies. *Academy of Management Journal*, 36(6), 1515-1546.
- IX.6. Walsham, G. "Interpretive case studies in IS research: nature and method," *European Journal of Information Systems* (4), 1995, pp. 74-81.
- IX.7. Cooper, R.B., "Information Technology Development Creativity: A Case Study of Attempted Radical Change," *MIS Quarterly*, Vol. 24, No. 2, 2000, pp. 245-276.
- IX.8. Eisenhardt, Kathleen M., "Building Theories from Case Study Research", *The Academy of Management Review*, Vol. 14, No. 4. (Oct., 1989), pp. 532-550.

References Books:

- Hunter, J. and F. Schmidt (1982). *Meta-analysis: cumulating research findings across studies*. Beverly Hills, CA, Sage.
- Yin, Robert K., *Case Study Research, Design and Methods*, Sage Publications Inc., 1984.

X. Action Research (Week 12)

- X.1. Susman, G. I. & R. D. Evered, (1978). "An assessment of the scientific merits of action research." *Administrative Science Quarterly*, 23:582-603.
- X.2. Kaiser, K. "Personality Characteristics of MIS Project Teams: An Empirical Study and Action-Research Design," *MISQ*, Vol. 6, No. 4, 1982, pp. 43-60.
- X.3. Wood-Harper, T. "Research Methods in Information Systems: Using Action Research," in Mumford, E. et al. (Eds.) *Research Methods in Information Systems*, Elsevier Science Publishers, 1985.
- X.4. Susman, G. and Evered, R. "Action Research as a Corrective to the Deficiencies of Positivism Science," pp. 529-530 in McLennan, R. (Ed.), *Managing Organizational Change*, Prentice-Hall, 1989; and Susman, G. I. "Action Research: A Sociotechnical Systems Perspective"
- X.5. Checkland, P. "From framework through experience to learning: the essential nature of action research," in *Information Systems Research: Contemporary Approaches and Emergent Traditions*, H-E. Nissen, H.K. Klein, R.A. Hirschheim (eds.), North-Holland, Amsterdam, 1991, pp. 397-403.
- X.6. Vidgen, R. & K. Braa, (1997). *Balancing interpretation and intervention in information system research: The action case approach*.

References Books:

- Susman, G. *Action Research: A Sociotechnical Systems Perspective*, Sage Publications, 1983.

XI. Meta Analysis (Week 13)

- XI.1. Tornatzky, L.G. and Klein, K.J. "Innovation Characteristics and Innovation Adoption Implementation: A Meta-Analysis of Findings," *IEEE Transactions on Engineering Management* (29:1), Feb. 1982, pp. 28-44.
- XI.2. Montazemi, A. and Wang, S. "The Effects of Modes of Information Presentation on Decision-Making: A Review and Meta-Analysis," *JMIS*, Vol. 5, No. 3, 1989, pp. 101-127.
- XI.3. Benbasat I. & Lim, L.H. (1993) "The Effects of Group, Task, Context and Technology Variables on the Usefulness of Group Support Systems: A Meta-Analysis of Experimental Studies", *Small Group Research* (November 1993), pp. 430-462. \
- XI.4. Hwang M. (1996) "The Use of Meta-Analysis in MIS Research: Promises and Problems" *The Data Base for Advances in Information Systems*, 27, 3 (Summer, 1996) 35-48.
- XI.5. Dennis, A.R., Wixom, B.H., and Vandenberg, R.J., "Understanding Fit and Appropriation Effects in Group Support Systems via Meta-Analysis, *MIS Quarterly*, Vol. 25, No. 2, 2001.

References Books:

- Hunter, J. and F. Schmidt (1982). *Meta-analysis: cumulating research findings across studies*. Beverly Hills, CA, Sage.

XII. AI & Expert Systems Research Methods (Week 14)

- XII.1. Nilsson, N. "The Interplay between Experimental and Theoretical Methods in Artificial Intelligence," *Cognition and Brain Theory*, Vol. 4, No. 1, 1980, pp. 69-74.
- XII.2. Hall, R. and Kibler, D. "Differing Methodological Perspectives in Artificial Intelligence Research," *The AI Magazine*, Fall, 1985, pp. 166-178.
- XII.3. Cohen P. and Howe, A. "How Evaluation Guides AI Research," *AI Magazine*, Winter 1988, pp. 35-43.
- XII.4. Cohen, P. and Howe, A. "Toward AI Research Methodology: Three Case Studies in Evaluation," *IEEE SMC*, Vol. 19, No. 3, 1989, pp. 634-645.
- XII.5. Baldwin, Dirk and Surya B. Yadav. "The Process of Research Investigations in Artificial Intelligence--An Unified View, *IEEE Trans. on Systems, Man, and Cybernetics*, May 1995, Vo. 25, Number 5, pp852-860.

XIII. Research Validation (Week 15)

- XIII.1. Straub, Detmar W. "Validating Instruments in MIS Research," *MIS Quarterly*, June 1989, pp. 146-165.
- XIII.2. Barlas, Yaman and Stanley Carpenter. "Philosophical Roots of Model Validation: Two Paradigms," *System Dynamics Review*, vol. 6, no. 2, Summer 1990, pp148-166.
- XIII.3. Doll, W.J., Xia, Weidong, and Torkzadeh, G. "A Confirmatory Factor Analysis of the End-user Computing Satisfaction Instrument," *MIS Quarterly*, Vol. 18 No. 4, Dec. 1994, pp. 453-463.
- XIII.4. Youngblood, Simon M. and Dale K. Pace. "An Overview of Model and Simulation Verification, Validation, and Accreditation," *John Hopkins APL Technical Digest*, vol. 16, no. 2, 1995, pp197-206.
- XIII.5. Kleijnen, J.P. "Verification and Validation of Simulation Models," *European Journal of Operations Research*, Vol. 82, No.1, April 1995, pp.145-162.
- XIII.6. Kim, Y. and March, S. "Comparing Data Modeling Formalisms," *CACM*, June 1995, pp.103-115.

XIV. Additional Research Approaches, Tools and Techniques (e.g., Simulation, LISREL, Design Science, etc.) (Week 16)

- XIV.1. Banks, J., Carson II, J.S., Nelson, B. L. and Nicol, D. M. *Discrete-Event System Simulation* Prentice-Hall, 1984, Chapter 1.
- XIV.2. Kerlinger, F. *Foundations of Behavioral Research*, 3rd ed., New York: Holt, Rinehart and Winston, 1986, pp. 597-617.
- XIV.3. Hox, J. J. and T. M. Bechger. "An introduction to structural equation modeling." *Family Science Review*, 11, 1998, 354-373.
- XIV.4. Anderson J. and Gerbing, D. "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach," *Psychology Bulletin*, Vol. 103, No. 3, 1988, pp. 411-423.
- XIV.5. Nunamaker, J.F., Jr., Chen, M., Purden, T.D.M., "Systems Development in Information Systems Research," *Journal of Management Information Systems*, Volume 7, Number 3, Winter 1990-91, pp. 89-106.
- XIV.6. Hevner, A. R. and S. T. March. "Design Science in Information Systems Research." *MIS Quarterly*, 28(1): 75-86, 2004.
- XIV.7. Smith, Roger D. "Simulation: The Engine Behind The Virtual World". URL: <http://www.modelbenders.com/>.
- XIV.8. Johnson, D.S, "A Theoretician's Guide to the Experimental Analysis of Algorithms" URL: <http://www.research.att.com/~dsj>, 2001 (November), DRAFT of a paper that appeared in the *Proceedings of the 5th and 6th DIMACS Implementation Challenges*, Goldwasser, Johnson, and McGeoch, (eds), *American Mathematical Society*, 2002, 215-250.
- XIV.9. Todd, P. and Benbasat, I., "Process tracing methods in decision support systems research," *MIS Quarterly*, Dec 1987, 11 (4), 493 – 514.
- XIV.10. Ericsson, K. Anders and Herbert A. Simon, *Verbal Reports as Data*, *Psychological Review*, 87(3), May 1980, pp. 215-251.

References Books:

- Ericsson K A and Simon H A (1993). *Protocol Analysis: Verbal Reports as Data*, MIT Press, Cambridge, MA.
- Shannon, R.E. (1975). Systems simulation--the art and science, Englewood Cliffs, N.J.: Prentice-Hall, Inc.
- Introna, L. D. and F. M. Ilharco (2004). Phenomenology, Screens, and the World: A Journey with Husserl and Heidegger into Phenomenology. *Social Theory and Philosophy for Information Systems*.

XV. Ethical and Legal Issues in Research with Human Subjects (Week 16) [ALL]

- XV.1. Hirschheim, R. and H. K. Klein. "Realizing emancipatory principles in information systems development: The case for ETHICS." *MIS Quarterly* 18(1), 1994, 83.
- XV.2. The "Belmont Report," <http://ohrp.osophs.dhhs.gov/humansubjects/guidance/belmont.htm>. Ilgen, D.R., & Bell, B. (1999).
- XV.3. Conducting industrial and organizational psychological research: Institutional review of research in work organizations, *Ethics & Behavior*, 11(4), 395-412.
- XV.4. UNO requirements on human subjects research: Institutional Review Board, <http://www.unmc.edu/irb/>.
- XV.5. Training in protection of human subjects, <http://www.unmc.edu/irb/citi/>

XVI. Writing and Publishing: From dissertation to tenure and beyond (This material was largely covered in the introductory doctoral colloquiums on IT research, teaching and profession)

- XVI.1. Daft, R.L. "Learning the Craft of Organizational Research," *Academy of Management Review*, Volume 8, Number 4, 1983, pp. 539-546.
- XVI.2. Daft, R.L. "Why I Recommend that Your Manuscript be Rejected and What You Can Do About It." In Cummings, L.L. & Frost, P.J. (Eds.), *Publishing in the Organizational Sciences*, Homewood, IL: Richard D. Irwin, Inc., 1985.
- XVI.3. Markland, B., "Research Tips," *Decision Line*, Volume 20, Number 1, Dec/Jan 1989.
- XVI.4. Hershauer, J.C., "A Few Thoughts About Research Papers," *Decision Line*, March 1991, pp. 15-16.
- XVI.5. Baumeister, R.F., "Dear Journal Editor, It's Me Again," *Dialogue*, 1991.
- XVI.6. Zmud, R., "A Manuscript's Introduction," and "A Manuscript's Conclusion," Editor's Comments, *MIS Quarterly*, Volume 19, Number 2, June 1995, <http://www.misq.org/archivist/vol/no19/issue2/edstat.html#intro>
- XVI.7. Zmud, R., "The Role of Theory in Scholarly Manuscripts," Editor's Comments, *MIS Quarterly*, Volume 19, Number 3, September 1995, <http://www.misq.org/archivist/vol/no19/issue3/edstat.html#theory>
- XVI.8. Zmud, R., "Describing a Study's Methodological Procedures," Editor's Comments, *MIS Quarterly*, Volume 19, Number 4, December 1995, <http://www.misq.org/archivist/vol/no19/issue4/edstat.html#method>
- XVI.9. Zmud, R., "A Manuscript's Discussion Section," Editor's Comments, *MIS Quarterly*, Volume 20, Number 1, March 1996, <http://www.misq.org/archivist/vol/no20/issue1/edstat.html#talk>
- XVI.10. Davis, G.B., and Parker, C.A. *Writing the Doctoral Dissertation: A Systematic Approach*, 2nd edition, Barron's Education Series, 1997.
- XVI.11. Grover, V. (2001). "10 Mistakes Doctoral Students Make in Managing their Program." *Decision Line*.

OTHER SUGGESTED SUPPLEMENTAL READING MATERIALS

The IS/IT field is constantly evolving in its use of research approaches. The following list consists of additional readings that students may consider exploring beyond the seminar and/or to complement the readings in the course.

Fundamental IS/IT Concepts and Frameworks

- Ackoff, R.L. "Management Misinformation Systems," *Management Science*, Volume 14, Number 4, December 1967, pp. B147-B156.
- Rappaport, A. "Management Misinformation Systems: Another Perspective," *Management Science*, Volume 15, Number 4, December 1968, pp. B133-136.
- Mason, R. and Mitroff, I. "A Program for Research on Management Information Systems," *Management Science*, Vol. 19, No. 5, 1973, pp. 475-487.
- Dickson, G.W. "Management Information Systems: Evolution and Status," *Advances in Computers*, Volume 20, 1981, pp. 2-37.
- Hirschheim, R. and H. K. Klein (1989). "Four Paradigms of Information Systems Development." *Communications of the ACM* 32(10): 1199.
- Conner, K. R. and C. K. Prahalad (1996). "A resource-based theory of the firm: Knowledge versus opportunism." *Organization Science* 7(5): 477.
- Alter, S. (1999). "A General, Yet Useful Theory of Information Systems." *Communications of the Association for Information Systems*.
- Bacon, C. J. and B. Fitzgerald (2001). "A Systematic Framework for the Field of Information Systems." *Data Base for Advances in Information Systems*.
- Nicholas G. Carr, "IT Doesn't Matter" *Harvard Business Review*, May 2003, pp 41 – 49.
- Brown, J. S. and J. I. Hagel (2003). "Does IT matter?" *Harvard Business Review*: 109-112.

Philosophy of Science and Social Science

- Boyd, R. (1992). "Constructivism, Realism, and Philosophical Method". In: J. Earman (Editor), *Inference, Explanation, and Other Frustrations – Essays in the Philosophy of Science*, Berkeley, CA: University of California Press, 1992, pp. 131-198.

Theory Building and Testing

- Jenkins, A.M. "Research Methodologies and MIS Research," in *Research Methods in Information Systems*, E. Mumford et al. (eds.), North Holland, 1985, pp. 103-117.
- Galliers 'Choosing Appropriate IS Research Approaches: a revised taxonomy' In H-E Nissen, et al., eds. "IS Research: Contemporary Approaches and Emergent Traditions", North-Holland, Amsterdam, 1991, pp. 327-345
- Hirschheim, R. A., (1992). Information systems epistemology: an historical perspective. In: R. Galliers, editor. *Information Systems Research: Issues, Methods and Practical Guidelines*. Blackwell Scientific Publications, Oxford.
- Galliers 'Reflections on IS Research: Twelve Points of Debate' in J Mingers & F Stowell (eds.), "IS Research: An Emerging Discipline", McGraw-Hill, London, 1997, pp.141-157.
- Myers, M.D., "Qualitative Research in Information Systems," *MIS Quarterly*, Volume 21, Number 2, June 1997, pp. 241-242, and <http://www.misq.org/misqd961/isworld/>

Overview of Research Methods and Tradeoffs

- Galliers, R., (1992). "Choosing an information systems research approach." In: R. Galliers, editor. *Information Systems Research: Issues, Methods and Practical Guidelines*. Blackwell Scientific Publications, Oxford.
- Fitzgerald, B., and Howcroft, D. "Competing Dichotomies in IS Research and Possible Strategies for Resolution," in *Proceedings of the Nineteenth International Conference on Information Systems*, R. Hirschheim, M. Newman, and J. DeGross (eds.), 1998, pp. 155-164.
- Westfall, R. "An IS Research Relevance Manifesto," *Communications of the Association for Information Systems*, Volume 2, Paper 14, September 1999, <http://cais.isworld.org/articles/2-14/>.

Experimentation

- Van Horn, R. "Empirical Studies of Management Information Systems," *Data Base*, 1973, pp. 172-180.
- Benbasat, I. "An Analysis of Research Methodologies," in *The Information Systems Research Challenge*, Proceedings, HBS Research Colloquium, F.W. McFarlan (Ed.), 1984, pp. 47-88.
- Bariff, M.L., and Ginzberg, M.J. "MIS and the Behavioral Sciences: Research Patterns and Prescriptions," *Data Base*, Fall 1992, pp. 19-26.

Action Research

- Peters, M. and Robinson, V. "The Characteristics of Action Research," pp. 216-219 in McLennan, R. (Ed.), *Managing Organizational Change*, Prentice-Hall, 1989.
- Mansell, G., "Action Research in Information Systems Development," *Journal of Information Systems*, Volume 1, 1991, pp. 29-40.
- Baskerville, R. and A. T. Wood-Harper (1998). "Diversity in information systems action research methods." *European Journal of Information Systems* 7(2): 90-107.

Alternative Research Approaches (e.g., Qualitative Research, Grounded Theory,)

- Nunamaker, J.F., Jr., Chen, M., Purden, T.D.M., "Systems Development in Information Systems Research," *Journal of Management Information Systems*, Volume 7, Number 3, Winter 1990-91, pp. 89-106.
- Cornford, T. and Smithson, S. (1996) *Project Research in Information Systems A Student's Guide*, Macmillan Press, London.
- Clarke, S. A. and B. Lehane (1997). "Total Systems Intervention and Human Inquiry: The Search for a Common Ground." *Systems Practice* 10(5): 611-634.
- Gallivan, R., (1997). Value in triangulation: a comparison of two approaches for combining qualitative and quantitative methods. In: A. S. Lee & J. Liebenau, editors. *Proceedings of Information Systems and Qualitative Research*, IFIP TC 8 WG 8.2, Philadelphia (ISQR).
- Miller, D.C. *Handbook of Research Design and Social Measurement*, Sage Publications, Newbury Park CA, 6th edition, 2002

Philosophy of Science/Scientific Inquiry in IS

- Boyd, R. (1992). "Constructivism, Realism, and Philosophical Method". In: J. Earman (Editor), *Inference, Explanation, and Other Frustrations – Essays in the Philosophy of Science*, Berkeley, CA: University of California Press, 1992, pp. 131-198.
- Galliers, B. (1993). "Research Issues in Information Systems", *Journal of IT*, 8(2), 1993, pp. 92-98

- Markus, M. L. (1997). The qualitative difference in information systems research and practice. In: A. S. Lee & J. Liebenau, editors. *Proceedings of Information Systems and Qualitative Research, IFIP TC 8 WG 8.2, Philadelphia (ISQR)*.
- Sudweeks, F. and Simoff, S. (1998). Complementary explorative data analysis: The reconciliation of quantitative and qualitative principles, in Jones, S. (ed.), *Doing Internet Research*, Sage Publications, pp. 29-55.
- Todd, P., and Benbasat, I. "Process Tracing Methods in Decision Support Systems: Exploring the Black Box," *MIS Quarterly*, Volume 11, Number 4, pp. 493-512.

Survey Research

- Baroudi, J., Olson, M. and Ives, B. "An Empirical Study of the Impact of User Involvement on System Usage and Information Satisfaction," *Communications of the ACM*, Vol. 29, No. 3, 1986, pp. 232-238.
- Davis, F.D., "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly*, Sep. 1989, pp. 319-340.
- Teng, J.T.C., and Galletta, D.F. "MIS Research Directions: A Survey of Researchers' Views," *Data Base*, Winter/Spring 1991, pp. 53-62.
- Karimi, J., Bhattacharjee, A., Gupta, Y., and Somers, T., "The Effects of MIS Steering Committees on Information Technology Management Sophistication," *Journal of Management Information Systems*, Vol. 17, No. 2, Fall 2000, pp. 207-230.

Case Research

- Remenyi, D., *Reengineering Charter Life -A Case Study*, *Journal of Business Change and Reengineering*, Vol. 3 No 2, p13-25, Apr11, 1996.
- Darke, P., G. Shanks, et al. (1998). "Successfully completing case study research: combining rigor, relevance and pragmatism." *Information Systems Journal* 8(4): 273.

Action Research

- Kock, N.F., Jr., McQueen, R.J. and Scott, J.L. (1997), "Can Action Research be Made More Rigorous in a Positivist Sense? The Contribution of an Iterative Approach", *Journal of Systems and Information Technology*, V.1, No.1, pp. 1-24.
- Kock, N.F., Jr. (1997), "Myths in Organizational Action Research: Reflections on a Study of Computer-Supported Process Redesign Groups", *Organizations & Society*, V.4, No.9, pp. 65-91.

Meta Analysis

- Alavi, M., and Joachimsthaler, E. A. (1992) "Revisiting DSS Implementation Research: A Meta-Analysis of the Literature and Suggestions for Researchers." *MIS Quarterly*, 16 (1), 95-116.