

BIOGRAPHICAL SKETCH

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NAME Barbara Mirel, D.Arts		POSITION TITLE Associate Research Scientist	
eRA COMMONS USER NAME (credential, e.g., agency login) BMIREL			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Michigan	B.A.	1972	History
University of Michigan	D. Arts	1987	English/Rhetoric

Academic Positions

1987- 192	Assistant Professor, Technical Communications, Illinois Institute of Technology, Chicago, IL
1992-96	Assistant Professor, Rhetoric and Technical Communication, DePaul University, Chicago, IL
1995-97	Co-Director and co-developer, Computer Science/Liberal Arts B.A. Program in Computing, DePaul University, Chicago, IL
1996-97	Associate Professor, Rhetoric and Technical Communication, DePaul University, Chicago, IL
1996-97	Visiting Associate Professor, College of Engineering, University of Michigan, Ann Arbor, MI
2001-03	Adjunct Faculty, School of Information/Human-Computer Interaction, University of Michigan, Ann Arbor, MI
2003-05	Visiting Associate Professor, School of Information, University of Michigan, Ann Arbor, MI
2005-07	Research Assistant Professor, School of Information, University of Michigan, Ann Arbor, MI
2007-now	Associate Research Scientist, School of Education, University of Michigan, Ann Arbor, MI

Industry/Research and Development Positions

1997-	Senior Manager, Human Factors, Visual Insights, Lucent Technologies, Chicago, Illinois
2000	Member of the Technical Staff, Voice over IP Development, Lucent Technologies, Chicago, IL
2000-	Cognitive Engineer, Patient Safety and Health, Department of Veteran Affairs, Ann Arbor, MI
2000	

Honors & Awards

- Co-author of article awarded Best article in Technical Communication Quarterly, Association of Teachers of Technical Writing, April, 2008
- Author of article awarded Best Article on Qualitative or Quantitative Methods in Technical or Scientific Communication from the National Council of Teachers of English, 2007
- 1999ACM-SIGDOC Outstanding Lifetime Achievement (Rigo Award), 2000
- Co-editor of volume awarded the Best Collection of Essays Award for the National Council of the Teachers of English Excellence in Technical and Scientific Writing, 2003
- Patent for Visual Discovery, an interface design of interactive visualizations for analyzing and exploring multidimensional data, 2001
- Author of journal article awarded best Article on Philosophy or Theory of Technical or Scientific Communication from the National Council of Teachers of English, 1999

Selected Publications

Books: Mirel B. and R. Spilka (Eds., 2002) *Reshaping technical communication: New directions and challenges for the 21st century*. Mahway, NJ: Lawrence Erlbaum Associates.

Mirel, B. (2004) *Interaction design for complex problem solving: Developing useful and usable software*. San Francisco: Elsevier/Morgan Kaufmann

Articles:

Mirel, B. (1987) "Designing field research in technical communications: Usability testing for in-house user manuals." *Journal of Technical Writing and Communication* 17 (4), 347-354

Mirel, B.(1988) "Cognitive processing, text linguistics and documentation writing." *Journal of Technical Writing and Communication* 18 (2), 111-133.

Mirel, B. (1990) "Expanding the activities of in-house manual writers: Strategies for complex audiences and purposes." *Management Communication Quarterly* 3 (4) 496-526.

Mirel, B. (1991) "Critical review of experimental research on the usability of hard copy documentation." *IEEE Transactions on Professional Communication* 34, 109-122

Mirel, B. (1991) "Toward a more precise definition of task-sufficient information." **Journal of Computer Documentation* 15, 22-33

Mirel, B., S. Feinberg and L. Allmendinger (1991) "Strategies for designing manuals for active learning styles." *Technical Communication* 38, 75-86

Mirel, B. (1992) "Analyzing audiences for software manuals: A survey of instructional needs for 'real world tasks.'" *Technical Communication Quarterly* 1 (Winter) 13-38.

Mirel, B. (1994) "Analyzing electronic help exchanges: An inquiry into instructions for complex tasks." *Technical Communication* 41, 210-223

Mirel, B. (1994) "Debating nuclear energy: Theories of risk and purposes of communication." *Technical Communication Quarterly* 3, 41-65

Mirel, B., S. Feinberg, and L. Allmendinger (1995) "Collaboration between writers and graphic designers in documentation projects." *Journal of Business and Technical Communication* 9, 259-288

Mirel, B. (1996) "Contextual inquiry and the representation of tasks. **Journal of Computer Documentation*. 20, 14-21

Mirel, B. (1996) "Writing in database technology: How technology helps extend the definition of writing in the workplace." In P. Sullivan and J. Dautermann (eds.) *Electronic literacies in the workplace: Technologies of writing*. Urbana: NCTE Press, 91-114 (2004) Reprinted with updated commentary, in J. Johnson-Eilola and S. Selber (Eds). *Central Works in Technical Communication*. New York: Oxford University Press

Mirel, B. and L. Olsen (1998) "Social and cognitive effects of professional communication on software usability." *Technical Communication Quarterly* 7, 197-221

Mirel, B. (1998) "Minimalism for complex information processing tasks." In John M. Carroll (ed.) *Minimalism beyond the Nurnberg funnel*. Cambridge, MA: MIT Press, 179-218.

Mirel, B. (1998) "Visualizations for data exploration and analysis: A critical review of usability research." *Technical Communication* 45 (Fourth Quarter), 491-509

Mirel, B. (1998) "'Applied constructivism' for user documentation: Alternative to conventional task-oriented help." *Journal of Business and Technical Communication* 12, 7-49.

Mirel, B. (1998) "Visualizations for data exploration and analysis: A critical review of usability research." *Technical Communication* 45 (Fourth Quarter), 491-50

- Mirel, B. (1999) "Usability test results for information visualizations: Determinants of usefulness for complex business problems." *Proceedings of Seventh IFIP Conference on Human-Computer Interaction INTERACT '99*. British HCI Group, 70-78
- Mirel, B. (1999) "Complex queries in information visualizations: Distributing instruction across documentation and interfaces." *Proceedings of ACM-SIGDOC Conference*. New York: ACM.
- Mirel, B. (1999) "Transforming design thinking for complex tasks." *Proceedings of 1999 Usability Professionals Association Conference*. Phoenix, Arizona
- Mirel, B. (2000) "Product, process, and profit: The politics of usability in a software venture." *Journal of Computer Documentation*. 24, 185-203
- Mirel, B. (2001) "Usability for dynamic work: Interface strategies that make or break support for complex problem solving." *Proceedings of 2001 Usability Professionals Association Conference*, Las Vegas, Nevada
- B. Mirel (2001) Testing the usability of interactive visualizations for complex problem solving: Findings related to improving interfaces and help. *Technical Writing and Communication* 31 (1), 7-26
- Mirel, B. (2002) "Frameworks and strategies for designing for complex problem solving" In Michael Albers and Beth Mazur (eds.) *Content and complexity: The role of content in information design*. Mahwah, NJ: Lawrence Erlbaum Associates, 233-262
- Mirel, B. (2002) "Advancing a vision of usability." In B. Mirel and R. Spilka (eds.) *Reshaping technical communication*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Mirel, B. (2003) "General hospital: Models of complex problem solving in complex work systems." *Proceedings of 2003 ACM-SIGDOC Conference*. San Francisco, CA, 60-67
- Mirel, B. (2003) "Frameworks and strategies for designing for complex problem solving" In M. Albers and Beth M. (Eds.) *Content and complexity: The role of content in information design*. Mahwah, NJ: Lawrence Erlbaum Associates, 233-262
- Mirel, B. and L. Allmendinger (2004) "Visualizing complexity: Getting from here to there in complex problem landscapes." *Information Design Journal + Document Design* 12 (Number 2), 141-151. Also in M. Ikeda (Ed.) *Information design sourcebook*. Tokyo: Graphic-Sha
- Mirel, B. N. Johnson, and J. Deng (2004). "Targeting the right level of socio-cognitive analysis: Complex problem-solving in high-performance networks." *Proceedings of the Human Factors and Ergonomics Society*.
- Mirel, B., M. Maher, and J. Huh (2005) "User needs in e-government: Conducting policy analysis with models on the web." *People and Computers XIX*. Edinburgh: British Human Computer Interaction Society, 131-148
- Mirel, B., M. Ackerman, K. Kerber and M. Klinkman (2006). "Designing CIS to improve decisions in depression care management: A discourse analysis of frontline practice." *Proceedings of AMIA Conference 2007*. Washington DC
- Mirel, B. and M. Ackerman (2006) "Engaging chronically depressed patients." *Proceedings HCI 2006 Volume 2*. London: British Human Computer Interaction Society,
- Mirel, B. and N. Johnson (2006) "Social determinants of preparing a cyberinfrastructure innovation for diffusion." *Technical Communication Quarterly* 15 (Summer) 329-354.
- Xuan, W., M. Dai, B. Mirel, J. Wilson, B. Athey, S. J. Watson, F. Meng (2007) "An active visual search interface for Medline" *Proceedings of the Conference on Computational Systems Biology (CSB 2007)*, San Diego, CA
- Mirel, B., P. Goldsmith, R. Brath, and B. Cort (2007) Visual analytics for model-based policy analysis: Exploring rapid changes in commodities markets. *Proceedings of the 8th Annual International Digital government Research Conference (dg.o 2007)*, 312-314

Mirel, B. (2007) "Usability and usefulness in bioinformatics: Evaluating a tool for querying and analyzing protein interactions based on scientists' actual research questions." *Proceedings of the IEEE International Professional Communication Conference*, Seattle, WA

Tarcea, VG, Weymouth, T, Ade, A, Gao, J, Wright, Z, Chapman, A, Jayapandian, M, Ozgur, A, Cavalcoli, J, Mirel, B, Radev, D, Athey, B, States, D, Jagadish, HV (2008) Michigan Molecular Interactions (MiMI) R2: From Interacting Proteins to Pathways. *Nucleic Acids Research (NAR) Database Issue*

Mirel, B, E. Barton, and M Ackerman (2008) "Capturing complex clinical interactions with a simple interface design: Applying discourse analysis to telemedicine care management for chronic disease." *Technical Communication Quarterly*.17:3, 358-378. Awarded Best article on research from the Association of Teachers of Technical Writing.

Mirel, B, Eichinger F, Nair V, Kretzler, M (2009) Integrating automated workflows, human intelligence and collaboration. *Proceedings of the AMIA Summit on Translational Bioinformatics*. San Francisco, CA.

Mirel, B. (2009). Supporting cognition in systems biology analysis: Findings on users' processes and design implications. *Journal of Biomedical Discovery and Collaboration* 4:2, 1-17

W. Xuan, M. Dai, B. Mirel, J. Song, B. Athey, S. J. Watson and F. Meng (2009) PubOnto: Open Biomedical Ontology-Based Medline Exploration. *BMC Bioinformatics* (In press)

W. Xuan, M. Dai, J. Buckner, B. Mirel, J. Song, H. Dong, B. Athey, S. J. Watson and F. Meng (2009) Cross-Domain Neurobiology Data. Integration and Exploration. *Proceedings of the International Joint Conference on Bioinformatics, Systems Biology and Intelligent Computing* (IJCBS'09)

Mirel, B and Wright, Z (2009) Heuristic evaluations of bioinformatics tools: a development case. *Proceedings of the 13th International Conference on Human Computer Interaction (HCI-09)*. San Diego

Book chapters

Mirel, Barbara (1988) "The politics of usability: The organizational functions of an in-house manual." In Stephen Doheny-Farina (ed.). *Effective documentation: What we have learned from research*, 277-297. Cambridge, MA: MIT Press. This book won the 1989 Best Collection of Essays Award for the National Council of the Teachers of English Excellence in Technical and Scientific Writing.

Mirel, Barbara and Leif Allmendinger (2003) "Visualizing complexity: Getting from here to there in complex problem landscapes." In Minato Ikeda (Ed.) *Information design sourcebook*. Tokyo: Graphic-Sha

Mirel, Barbara (1993) "Beyond the monkey house: Audience analysis in computerized workplaces." In Rachel Spilka (ed.) *Writing in the workplace: New research perspectives*. Carbondale: Southern Illinois University Press, 21-40. This book won the 1994 Best Collection of Essays Award for the National Council of the Teachers of English Excellence in Technical and Scientific Writing

Mirel, Barbara (1996) "Writing in database technology: How technology helps extend the definition of writing in the workplace." In Patricia Sullivan and Jennie Dautermann (eds.) *Electronic literacies in the workplace: Technologies of writing*. Urbana: NCTE Press, 91-114.

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Mirel, Barbara (2003) "Frameworks and strategies for designing for complex problem solving" In Michael Albers and Beth Mazur (eds.) *Content and complexity: The role of content in information design*. Mahwah, NJ: Lawrence Erlbaum Associates, 233-262

Ackerman, Mark and Mirel, Barbara (in press). "Designing information to facilitate chronic disease management. In William Aspray and Barbara Hayes (eds) *Health informatics: a patient-centered approach to diabetes*. MIT Press

Patents

1999 United States Patent 6707454: Systems and methods for visualizing multi-dimensional data in spreadsheets and other data structures.

Pend- World Food Model. A dynamic three-dimensional visualization based on food system/commodities
Ing modeling. With colleagues from University of Illinois and Oculus Info in Toronto.