

Judith Reitman Olson
Professor of Computer and Information Systems
Professor of Information
and Professor of Psychology

701 Tappan Street
Graduate School of Business
University of Michigan
Ann Arbor, Michigan 48109-1234

Office Phone: (734) 647-4606
Home Phone: (734) 677-2515

Research Interests

Human-computer interaction, computer-supported cooperative work, the design of business information systems, and cognitive psychology.

Education

- 1965 B. A., Northwestern University
Mathematics and Psychology
- 1969 Ph. D. University of Michigan
Mathematical Psychology
- 1970 Postdoctoral Fellow, Stanford University
Cognitive Psychology

Appointments

- 1970-76 Lecturer, then Assistant Professor, Department of Psychology,
University of Michigan
- 1976-80 Associate Professor (with tenure), Department of Psychology, University
of Michigan
- 1980-83 Member of Technical Staff then Technical Supervisor, Bell Laboratories,
Holmdel, New Jersey
- 1983-90 Associate Professor, Computer and Information Systems, Business
School, and Associate Professor of Psychology, University of Michigan
(with tenure in 1987)
- 1990- Professor, Computer and Information Systems, Business School, and
Professor of Psychology, University of Michigan (Chair of CIS, 92-95)
- 1996- Professor, School of Information

Sabbaticals

- 1989-90 Visiting Research Scientist, Rank Xerox EuroPARC, and Visiting Scholar, Applied Psychology Unit, Medical Research Council, Cambridge, England
- 1998 Visiting Researcher at Xerox PARC one month. Also on site in London, UK, 5 weeks.

Fellowships, Grants, and Contracts

- 1967 NIH Traineeship in Mathematical Psychology, University of Michigan
- 1969-70 NIH Postdoctoral Fellowship, Stanford University
- 1971-73 NIMH Research Grant, "Mechanisms of Human Verbal Memory," (\$30,000 a year for two years)
- 1976 Rackham Research Grant, "The Role of Cognitive Structure in the Elimination of Information Overload," (\$5,000)
- 1977 Rackham Research Grant, "Acquiring and Using Structured Information in Memory," (\$5,000)
- 1977-78 Center for Research on Learning and Teaching, Faculty Development Grant (\$5,000)
- 1977-79 NSF Research Grant, "Acquiring and Using Structured Information in Memory," (\$40,000 a year for two years)
- 1979-82 NSF research Grant, "Organization in Memory," (\$60,000 a year for three years)
- 1984 Rackham Research Grant, "Cognitive Analysis of Software," (\$10,000)
- 1985 Steelcase equipment grant for specialized furniture for computer workstations for the Human-Computer Interaction Laboratory (\$100,000).
- 1987 Army Research Institute, "Novice and Expert Knowledge of Computer Command Language Use," (\$13,000 for one year)
- 1986-89 NSF, "The EXPRES Project: Electronic Development, Submission, Review, and Awarding of NSF Proposals," (Conway, Van Houweling,

G. Olson and Atkins were the PIs. About \$150,000 was for our research on human factors aspects, needs analysis, training and documentation.)

- 1988-89 Arthur Andersen, "Computer Support for Real-time Meeting Management--Planning Grant," (G. Olson and J. Olson, PIs, \$85,000 for four months)
- 1989-91 Arthur Andersen, "Research in Collaboration Technology," (G. Olson, J. Olson, and E. Soloway, Principal Researchers, \$150,000-\$200,000 a year for research and from \$250,000 to \$500,000 for building and equipping a research facility)
- 1989-93 Army Research Institute, "Skilled Use of Computer Software: Implications for Design and Training." J. Olson, PI (\$915,804 for four years, with subcontract to Peter Polson at Colorado)
- 1989-92 National Science Foundation, "Research in Information Systems to Support Group Work," (G. Olson, J. Olson, E. Soloway, S. Lytinen, L. Conway, D. Atkins, along with researchers from MCC and Arthur Andersen, \$275,00 a year for three years)
- 1992- Ameritech Services. Equipment grant of videocameras, monitors, and the Codec video-modem so we can make long-distance connections with Chicago (and the world), (approximately \$70,000).
- 1992 AT&T grant for purchase of equipment for video connectivity in remote work groups. \$125,000.
- 1993- Ameritech Foundation, \$150,000 for five years, to study the effect of various video mediate communication on the process and product of group work.
- 1994- Nippon Telephone and Telegraph (NTT-Japan). Equipment grant of Codec video modem for video connection to NTT in Japan. (approximately \$50,000).
- 1994-99 National Science Foundation \$750,000 over five years "Understanding the group processes in technology supported group work." J. Olson and G. Olson PIs.
- 1994 Intel, Incorporated. Equipment grant of 5 Pentium machines and ProShare software, valued at \$50,000

- 1994-97 Intel, Incorporated. Research grant of \$150,000 over three years to study the theoretical basis of designing technology to fit various work types.
- 1994 AT&T Foundation Equipment Grant, \$16,000.
- 1995-97 Steelcase Corporation. CREW partnership. \$200,000 (with commitment for another three years)
- Supplemental grant of \$67,000 to study the effects of dedicated space on productivity.
- 1996 IBM, \$89,000 for one year to study the introduction of Lotus Notes TeamRoom among two finance groups at IBM.
- 1997 Sun Microsystems. \$80,000 to study the development and execution of an immersive training plan for Java.
- 1998 Ford Motor Company. \$90,000 to study small design teams, technology and the design of space to enhance productivity.
- 1997-00 Ford Motor Company. \$50,000 a year for three years to study Virtual Collocation in Transmission Design and Testing group in Livonia, Bordeaux, and Cologne.
- 1998-00 Steelcase Inc. \$100,000/year in continued partnership to CREW.
- Steelcase, Inc. \$167,000 in additional project support for study of persistent visual displays.
- 1999-02 National Science Foundation. \$450,000 over three years. "Seeing is Believing: The Value of Video for Remote Interpersonal Connections." J. Olson, PI.

Awards

- 1980 AMOCO Award for Outstanding Teaching, University of Michigan
- 1980 Administrative Intern, Office of the President (Harold Shapiro), University of Michigan, and Summer Institute for Women in Higher Education Administration, Bryn Mawr.

Other Professional Activities

- 1982-89 National Research Council, Committee on Human Factors
Reports on:
Software Human Factors
Mental Models in Software Use
Human Factors Aspects of the Design of the Space Station for the Year 2000
Human Factors Issues in the Design and Use of Expert Systems (chair)
Human Factors Specialist Education and Utilization
- 1993-96 Council for the Association for Computing Machinery (ACM), the highest level governing board for 80,000 computing professionals.
- 1993-94 Co-chair for Papers for the National Conference in Computer-Human Interaction, CHI'94.
- 1990-91 Technical Co-Chair (with Gary M. Olson) of the National Conference in Computer-Human Interaction, CHI'91.
- 1995-96 Program Co-chair for CSCW-96 (with Gary M. Olson)
- 1998 Doctoral Consortium Co-chair, National Conference on Computer Supported Cooperative Work (CSCW'98)

Journal Responsibilities

- 1994-98 Editorial Board: *ACM: Transactions on Information Systems*
- 1994- 98 Editorial Board: *Journal of Experimental Psychology: Applied*
- 1990- Editorial Board: *Organizational Computing and Electronic Commerce.*
- 1982- Editorial Board: *Human Computer Interaction*
- 1990-94 Editorial Board: *Management Information Systems Quarterly*
- 1980-82 Editorial Board: *Psychological Review*
- 1977-78 Editorial Board: *Memory and Cognition*

1967- Outside Reviewer for:

Communications of the ACM, ACM: Transactions on Office Information Systems, International Journal of Man Machine Studies, Cognitive Science, Journal of Applied Psychology, Psychological Review, Cognitive Psychology, Perception and Psychophysics, Journal of Verbal Learning and Verbal Behavior, Management Information Systems Quarterly, National Science Foundation, National Institute of Mental Health, National Institute of Education

Memberships in Professional Associations

Association for Computing Machinery (ACM), ACM: Special Interest Group in Computer-Human Interaction, Human Factors Society, Cognitive Science Society, Psychonomics Society

Publications

Olson, G. M., and Olson, J. S. (in press) Distance Matters. *Human Computer Interaction*.

Veinott, E., Olson, J. S., Olson, G. M., and Fu. X. (1999) Video Helps Remote Work: Speakers who need to negotiate common ground benefit from seeing each other. *Proceedings of the Conference on Computer Human Interaction .CHI'99* Pp. 302-309.

Olson, J. S. and Olson, G. M. (1999) Computer-supported cooperative work. In F. Durso (Ed.) *Handbook of Applied Cognition*. Wiley. Pp. 409-442.

Olson, G. M., and Olson, J. S. (In press) Technology support for collaborative workgroups. In G. M. Olson, J. Smith, and T. Malone (Eds.), *Coordination theory and collaboration technology*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Olson, J. S., Covi, L, Rocco, E., Miller, W. J., and Allie, P. (1998) A room of your own: What would it take to help remote groups work as well as collocated groups? *Short Paper the Conference on Human Factors in Computing Systems (CHI'98)*, 279-280.

Covi, L. M., Olson, J. S., and Rocco, E. (1998) A room of your own: What do we learn about support of teamwork from assessing teams in dedicated project rooms? In N. Streitz, S. Konomi, and H. J. Burkhardt (Eds.) *Cooperative Buildings*. Amsterdam: Springer-Verlag. Pp 53-65.

Olson, G. M., and Olson, J. S. (1997) Research in computer supported cooperative work. In T. Landauer and M. Helander (Ed.s), *Handbook of Human Computer Interaction*. Elsevier. Pp. 1433-1457.

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Fu, X., Olson, G. M., and Olson, J. S. (1997) Computer supported cooperative work. (In Chinese) *Acta Psychologica Sinica*. 29, 104-110.

Veinott, E. S., Olson, J. S., Olson, G. M., and Fu, X. (1997) Video matters! When communication ability is stressed, video helps. *Short Paper at the Conference on Human Factors in Computing Systems (CHI'97)*. Atlanta, GA: ACM Press.

Olson, G. M., Olson, J. S. (1997). Making sense of the findings: Common vocabulary leads to the synthesis necessary for theory building. In Finn, K., Sellen, A., and Wilbur, S. (Eds.) *Video Mediated Communication*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Olson, J. S., Olson, G. M. (1997) Face-to-face group work compared to remote group work with and without video. In Finn, K., Sellen, A., and Wilbur, S. (Eds.) *Video Mediated Communication*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Olson, J. S., and Teasley, S. (1996) Groupware in the wild: Lessons learned from a year of virtual collocation. *Proceedings of the Conference on Computer Supported Cooperative Work*. New York: ACM. pp-419-427.

Bekker, M., Olson, J. S., and Olson, G. M. (1995) Analysis of gestures in face-to-face design teams provides guidance for how to use groupware in design. *Proceedings of the Designing Interactive Systems Workshop* Ann Arbor, MI. August.

Olson, G. M., and Olson, J. S. (1995) The effectiveness of simple shared electronic workspaces. Saul Greenberg, Stephen Hayne and Roy Rada (Eds) *Real Time Group Drawing and Writing* McGraw-Hill (Europe).

Olson, J. S. and Moran, T. (1996) Mapping the method muddle: Guidance in using methods for user interface design. In M. Rudisill, C. Lewis, P. B. Polson, Tim McKay (Eds.) *Human-computer interface design: Success Cases, emerging methods, and real world contexts*. New York: Morgan Kaufman. Pp 269-302.

Lohse, G.L., Min, D. and Olson, J. S. (1995) Cognitive evaluation of system representation diagrams. *Information and Management*

Herbsleb, J., Klein, H., Olson, G. M., Brunner, H., Olson, J. S., and Harding, J. (1995) Object Oriented Analysis and Design in Software Project Teams. *Human Computer Interaction* Vol 10, 2&3. 249-292.

Olson, J. S., Olson, G. M., and Meader, D. K. (1995) What mix of video and audio is useful for remote real-time work? *Proceedings of the Conference on Human Factors in Computing Systems (CHI'95)*. Denver, CO: ACM Press.

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Olson, G. M., Olson, J. S., Storrøsten, M., Carter, M., Herbsleb, J., and Rueter, H. (1995) The structure of activity during design meetings. In J. Carroll and T. Moran (Eds). *Design Rationale*.

McDaniel, S. E., Olson, G. M. and Olson, J. S. (1994) Methods in search of a methodology-- Combining HCI and Object Orientation. *Proceedings of the Conference on Human Factors in Computing Systems (CHI'94)*. Boston, MA: ACM Press. pp 145-151.

Olson, J. (1993) Groupware: Technology to support group work. in Ben Shneiderman (producer) *User Interface Strategies '94*. Video broadcast to 100 sites, with an estimated viewing audience of over 1,500. Sites included 14 IBM locations, Intel, Hewlett Packard (including Bristol, UK), and Apple, and nearly 20 universities and colleges. One hour broadcast from the University of Maryland, December 14, 1993.

Olson, J. S., Olson, G. M., Storrøsten, M., and Carter, M. (1993) Group work close up: A comparison of the group design process with and without a simple group editor. *ACM: Transactions on Information Systems*.

Davis, F.D. & Olson, J.S. (1993). Integrating motivational and performance-based theories of information systems design. *Behaviour and Information Technology*.

Nilsen, E., Jong, H. S., Olson, J. S., Biolsi, K., Rueter, H., and Mutter, S. (1993) The growth of software skill: A longitudinal look at learning and performance. *Human Factors in Computing Systems: CHI'93 Conference Proceedings*. New York: ACM.

Olson, J., Card, S. K., Landauer, T. K., Olson, G. M., Malone, T., and Leggett, J. (1993) Computer supported cooperative work: Research issues for the '90s. *Behavior and Information Technology*.

Olson, G. M., McGuffin, L. J., Kuwana, E., and Olson, J. S. (1993) Designing software for a group's needs: A functional analysis of synchronous groupware. in Bass and Dewan (Eds.) *Trends in Software*. John Wiley and Sons.

Olson, J. S., Olson, G. M., Storrøsten, M., and Carter, M. (1992) How a group-editor changes the character of a design meeting as well as its outcome. *Proceedings of the Conference on Computer Supported Cooperative Work*. New York: ACM.

Polson, P., Rieman, J., Wharton, C, and Olson, J. (1992) Usability inspection methods: Rationale and examples. *Proceedings of the SICE-HI'92 Conference*. Japan.

Olson, G. M., and Olson, J. S. (1992) Defining a metaphor for group work. *IEEE Software*. 9(3), 93-95.

Olson, G. M., Olson, J. S., Carter, M., and Storrøsten, M. (1992) Small group design meetings: An analysis of collaboration. *Human Computer Interaction*. 7, 347-374.

Nilsen, R., Jong, H., Olson, J. S. , and Polson, P. G. (1992) Method engineering: From data to model to practice. in *Human Factors in Computing Systems: CHI'92 Conference Proceedings*. New York: ACM.

Robertson, S., Olson, G. M., and Olson, J. S. (1991) Editors. *Human Factors in Computing Systems: CHI '91 Conference Proceedings*. Reading, MA: Addison Wesley.

Olson, J. R., and Biolsi, K. J. (1991) Techniques for representing knowledge structures. in A. Ericsson and J. Smith (Eds.) *Study of Expertise: Prospects and Limits*; Cambridge, England: Cambridge University Press.

Olson, G. M., and Olson, J. S. (1991) User centered design of collaboration technology. *Journal of Organizational Computing*, 1, 61-83.

Olson, J. S., Olson, G. M., Mack, L. A., and Wellner, P. (1990) Concurrent editing: The group's interface. In D. Diaper (Ed.) *INTERACT '90 - Third IFIP Conference on Human Computer Interaction*. Elsevier.

Olson, G. M., Olson, J. S., McGuffin, L., Mack, L. A., Cornell, P., and Luchetti, R. (1990) Designing flexible facilities for the support of Collaboration. in G. R. Wagner (Ed.) *Computer Augmented Teamwork: A Guided Tour*. Van Nostrand Reinhold.

Olson, J. R., and Olson, G. M. (1990) The growth of cognitive modeling in human-computer interaction since GOMS. *Human Computer Interaction*, 5, 221-265.

Lerch, F. J., Mantei, M., and Olson, J. R. (1989) Skilled financial planning: The cost of translating ideas into action. In E. Soloway, D. Frye, and S. Sheppard (Eds.) *CHI'89: Human Factors in Computing Systems* New York: ACM.

Rueter, H. R., and Olson, J. R. (1988) "Psychological tools for knowledge acquisition," *Proceedings of the Second Annual Workshop on Space Operations, Automation and Robotics, (SOAR '88)*, Dayton, Ohio.

Olson, J. R., and Nilsen, E. (1988) Analysis of the cognition involved in spreadsheet software interaction. *Human-Computer Interaction*, Volume 3, Number 4, pp. 309-349.

Walker, N., and Olson, J. R. (1988) Designing keybindings to be easy to learn and easy to use even when the set of commands is large. In J. Carroll and P. Tanner (Eds.) *CHI '88 Human Factors in Computing Systems*. New York: ACM. pp. 201-205.

Carroll, J. M., and Olson, J. R. (1988) Mental models in human-computer interaction: Research Issues about What the User of Software Knows. in M. Helander (Ed.) *The Handbook of Human-Computer Interaction*. North Holland Press. pp. 45-65.

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Carroll, J. M., Olson, J. R., Anderson, N. (Eds) (1988) *Mental Models in Human-Computer Interaction: Research Issues About What the User of Software Knows* Washington, D. C.: National Academy Press, 1988.

Olson, J. R. and Rueter, H. R.(1987) Extracting expertise from experts: Methods for knowledge acquisition, *The Journal of Expert Systems*, Volume 4, No. 3, pp 152-168.

(Reprinted in *Heuristics: The Journal of Knowledge Engineering*, 1989)

Sasso, W. G., Olson, J. R., and Merten, A. (1987) The practice of office analysis: Objectives, obstacles, and opportunities. *Office Knowledge Engineering*, Vol 1 (2), pp 11-24.

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Anderson, N., and Olson, J. Reitman (Eds.) (1985) *Methods for Designing Software to Fit Human Needs and Capabilities: Proceedings of the Workshop on Software Human Factors*. Washington, D. C.: National Academy Press.

(Reprinted in *Readings in Human-Computer Interaction: A Multidisciplinary Approach*. in R. Baecker and William Buxton (Eds and authors), 1987, Los Angeles, CA: Morgan Kaufman, Inc.)

Olson, J. Reitman (1985) Expanded design procedures for learnable, usable interfaces. In L. Borman and W. Curtis (Eds.) *CHI '85: Human Factors in Computing Systems*, New York: ACM.

Olson, J. Reitman, Whitten, W. B., II, and Gruenenfelder, T. M. (1984) A general user-interface for creating and displaying tree-structures, hierarchies, decision trees, and nested menus. In Y. Vassiliou (Ed.) *Human Factors and Interactive Computer Systems*, New York: Ablex Publishing Company.

Reitman, J. S., Whitten, W. B., II, Gruenenfelder, T. M., and Sorce, J. (1983) Design and evaluation of a computer interface. *Proceedings of the International Conference in Human Factors in Telecommunications*, Helsinki, Finland.

McKeithen, K. B., Reitman, J. S., Rueter, H. R., and Hirtle, S. C. (1981) Knowledge organization and skill differences in computer programmers. *Cognitive Psychology*, 13, 307-325.

Reitman, J. S., and Rueter, H. R.(1980) Organization revealed by recall orders and confirmed by pauses. *Cognitive Psychology*, 12, 554-581.

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Reitman, J. S., and McArthur, D. (1979) Is computer chess like human chess? A review of Peter Frey, (Ed.), *Chess Skill in Man and Machine*. *Contemporary Psychology*, 4, 502-503.

Ayres, T., Jonides, J., Reitman, J. S., Egan, J., and Howard, D. (1979) Differing suffix effects for the same physical suffix. *Journal of Experimental Psychology: Human Learning and Memory*. 5, 315-321.

Holland, J. H., and Reitman, J. S. (1978) Cognitive systems based on adaptive algorithms. In F. Hayes-Roth and D. Waterman, (Eds.), *Pattern Directed Inference Systems*, New York: Academic Press.

Reitman, J. S. (1976) Skilled perception in Go: Deducing memory structures from inter-response times. *Cognitive Psychology*, 8, 336-356.

Reitman, W., Kerwin, J., Nado, R., Reitman, J., and Wilcox, B. (1974) Goals and plans in a program for playing Go. *Proceedings of the National Conference of the Association of Computing Machinery*. New York: ACM.

Reitman, J. S. (1974) Without surreptitious rehearsal, information in short-term memory decays. *Journal of Verbal Learning and Verbal Behavior*. 13, 365-377.

Reitman, J. S. and Bower, G. H. (1973) Storage and later recognition of exemplars of concepts. *Cognitive Psychology*, 4, 184-206.

Bower, G. H., and Reitman, J. S. (1972) Mnemonic elaboration in multi-list learning. *Journal of Verbal Learning and Verbal Behavior*. 11, 478-485.

Reitman, J. S. (1971) Mechanisms of forgetting in short-term memory. *Cognitive Psychology*, 2, 185-195.

Reitman, J. S. (1970) Computer simulation of an information processing model of short-term memory. In D. A. Norman (Ed.) *Models of Human Memory*. New York: Academic Press.

Reitman, J. S. (1969) *Short-term verbal retention with interpolated verbal and non-verbal signal detection*. (Doctoral dissertation, The University of Michigan) Ann Arbor, Michigan: University Microfilms.

Hutchins, E., Klaub, D., and Reitman, J. S. (1967) Minorities, manpower, and medicine. *Journal of Medical Education*. 42, 809-821.