

ANDREA A. DISESSA

Evelyn Lois Corey Professor of Education
 Graduate School of Education
 University of California
 Berkeley, CA 94720
 (510) 642-0745 or 642-4206 (messages)
 disessa@soe.berkeley.edu

Personal

Born: June 3, 1947
 Citizenship: U. S. A.

Education

Ph.D. in Physics Massachusetts Institute of Technology, May 1975
 A. B. in Physics Princeton University, May 1969
magna cum laude
Phi Beta Kappa

Research Interests

Computers in Education. Learning/Genetic Epistemology. Instruction in Physics and Mathematics. Programming Languages for Non-professionals.

Professional History

June 1972 - June 1982	Member of A.I. Laboratory - Logo Group M.I.T.
Sept. 1975 - June 1977	Special Lecturer, Education M.I.T.
Sept. 1977 - June 1981	Assistant Professor, Education M.I.T.
Sept. 1981 - June 1982	Associate Professor, Education M.I.T.
July 1982 - August 1982	Visiting Researcher Centre Mondial (World Center for Computers and Human Resources), Paris
July 1982 - March 1984	Principal Scientist, Laboratory for Computer Science

	M.I.T.
April 1984 - Sept. 1985	Senior Scientist, Laboratory for Computer Science Leader, Educational Computing Group M.I.T.
Sept. 1985 - June 1988	Associate Professor, Education U.C. Berkeley
July 1988 -	Professor, Education U.C. Berkeley
Sept. 1988 - Sept. 1989	Chairman, SESAME Graduate Program U.C. Berkeley
July 1989 - July 1991	Associate Dean for Academic Affairs Graduate School of Education, U.C. Berkeley
July 1992 - July 1993	Speaker, Division in Education in Mathematics, Science and Technology, Education, U.C. Berkeley
Sept. 1993 - Feb. 1994.	Visiting Professor, Media Lab., M.I.T.
March 1997 - July 2002.	Convener, Center for the Study of Critical Transitions. Funded by the Graduate School of Education, U.C. Berkeley, and the Spencer Foundation.
Sept. 1997 - June 1998	Fellow, Center for Advanced Study in the Behavioral Sciences
July 1998 - July 2000	Chair, Cognition and Development, Education, U.C. Berkeley
<u>Consulting Record</u> (major items)	
July 1980 - Dec. 1980	Texas Instruments, Dallas, TX
Sept. 1981 - Dec. 1981	Logo Computer Systems, Montreal, Quebec
Jan. 1982 - Sept. 1982	Bank Street College of Education, NY
April 1982 - Sept. 1985	Children's Television Workshop, Software Division Senior Consultant and Advisor
March 1983 - May 1983	Logo Computer Systems, Scientific Advisory Council Member

Jan. 1987 - June 1994

Affiliated Research Scientist, Institute for Research on Learning, Palo Alto, CA.

Awards and Honors

Walker-Ames Lecturer, University of Washington. Seattle, WA, February 17-21, 2003.
 Appointment as Chancellor's Professor of Education, 1998.
 Fellow, Center for Advanced Study in the Behavioral Sciences, 1997-98
 Elected to Membership, National Academy of Education, 1995.
 Australian Council for Educational Research / Australian Telecom Sunrise Fellow.
 Melbourne, Australia, May, 1990.

Professional

Contributing editor of the *Journal of Mathematical Behavior* (1982-present).
 Editor for *Instructional Science* (1984-1989).
 Editorial Board for *Instructional Science* (1989-1994).
 Editorial Board for the *Journal of the Learning Sciences* (1990-present).
 Editorial Board for *Interactive Learning Environments* (1990-1999).
 Editorial Board of *Cognition and Instruction* (1993-present).
 Editorial Board of the *Journal of Science Education and Technology* (1993-present).
 Editorial Board of the *International Journal of Computers for Mathematical Learning* (1995-present).
 Executive Editorial Board of the *International Journal of Computers for Mathematical Learning* (1999-present).
 Editorial Board of the *Journal of Interactive Learning Research* (1997-present).
 Editorial Board of Advisors, Technology and Education Newsletter, Lawrence Erlbaum Associates (1986-1990).
 Member, National Research Advisory Board, Model Technology School Project (one of four funded by the California State Government), Alhambra School District, Los Angeles, CA (1987-1989).
 Member, National Advisory Board, Science Modeling Project, NSF sponsored project, Technical Education Research Centers, Cambridge, MA (1987-1988).
 Member, Advisory Board, Reasoning Under Uncertainty, NSF sponsored project, BB&N, Cambridge, MA (1988-1989).
 Member, Advisory Board, Measuring and Modeling, NSF sponsored project, Technical Education Research Centers, Cambridge, MA (1989-1992).
 Founding Member of the Advisory Board for the SIG in Education in Science and Technology (1989- present).
 Member, National Advisory Board, Center for Development of Teaching, Educational Development Center, Newton, MA. 1992-1996.
 Affiliated Researcher, School Mathematics and Science Achievement Center, University of Wisconsin – Madison, 1996-2001. (Department of Education)
 Member, Advisory Board, ChemSense Project. (NSF-sponsored project, SRI International) 1999-present.
 Member, Advisory Board, Handheld Assessment Project. (NSF-sponsored project, SRI International) 2001-present.

Senior Researcher, Center for Diversity in Mathematics Education, 2001-2003. (NSF, \$10,000,000 collaborative center)
 Member, Advisory Board, Computationally-Enhanced Construction Kits: Integrating Tangible and Computational Media for Construction and Design. (NSF-Sponsored Project, University of Washington and University of Colorado). 2003 – present.
 Member, External Review Committee, Learning Lab Denmark Math and Science Consortium. April 28-May1, 2004.

Selected Sponsored Projects and Grants

“An Educational Computing Environment for 1990,” National Science Foundation, \$1,000,000 1985-1988.

“Models of Learning with a Computational Medium,” National Science Foundation, \$1,000,000 1988-1993.

“The Dynamics of Local Change in Intuitive Conceptions of Physics,” The Spencer Foundation, \$350,000 1991-1996.

Gift of computers from Sun Microcomputer, approximately \$70,000 1992.

“From Pictures to Scientific Representations: An Investigation of Children’s Meta-Representational Competence,” National Science Foundation, \$750,000, 1996-2000.

“Reforming Education through Science and Design: A Ph.D. Training Initiative” (with Marcia Linn and Michael Ranney), National Science Foundation, \$560,000 over 5 years, 1996-2002.

Subcontract from the National Center for Improving Student Learning and Achievement to work on technology-enhanced science education at the middle school level. About \$300,000 1998-2001.

Spencer Mentor Program, The Spencer Foundation, \$50,000 1997-1999.

“Understanding the Educational Implications of Component Software and the World Wide Web,” National Science Foundation, \$450,000 1999-2002.

“Patterns of change and control: Specifying ‘what to teach’ on the basis of scientific research,” the Spencer Foundation, \$480,000, 2004-2007.

Organization Membership

National Consortium on Uses of Computers in Mathematical Sciences Education, Steering Committee Member (1984-1986).

American Educational Research Association.

Cognitive Science Society.

International Society of the Learning Sciences.

Jean Piaget Society.

Mathematical Association of America.

Service

Government:

Conference on Future Funding for Computers in Education (U.S. Department of Education), Carnegie Mellon University and University of Pittsburgh, Pittsburgh, PA, November 20-24, 1982.

Commissioned report and presentation on technology and education to the Committee on Mathematics, Science and Technology of the Commission on Behavioral and Social Sciences and Education, National Academy of Sciences, October, 1984. (An abridged version published in *Journal of Research in Science Education* as "The third revolution is computers and education.")

Panel on Information Technology in Precollege Education, a Research Briefing for the Office of Science Technology Policy, the National Science Foundation and Selected Federal Departments, by the Committee on Science, Engineering and Public Policy, National Academy of Sciences, 1984.

Panel on Science Achievement Tests for the Committee on Indicators of Precollege Science and Mathematics Education, National Research Council, Oct. 11-12, 1985.

Panel on Strategic Planning for National Utilization of Advanced Technology for Improving Precollege Science and Mathematics Education for the National Science Foundation, Washington, D.C., December, 1985.

Planning Meeting on the Incorporation of Emerging Technologies into Engineering Education. National Research Council, Board on Engineering Education. Irvine, CA, July 20-22, 1992.

Presentation to The Committee on Information Technology Literacy, The Computer Science and Telecommunications Board (CSTB) of the National Research Council. Washington, D.C. April 4, 1998.

NSF/IERI Roundtable on Technology in Education. Washington, D. C., October 31 - November 1, 1999.

Other National:

American Institute of Physics/American Association of Physics Teachers - Introductory University Physics Project. St. Louis meeting, Feb. 23-25, 1989. Denver meeting, Nov. 10-12, 1989.

Chair, Special Interest Group in Science and Technology Education, American Educational Research Association (1992-93). (Chair-elect, 1991-92; Chair, 1992-93; Past Chair, 1993-94)

Panel on a proposed Science Study project for the Committee on Science Education,
National Research Council, Washington, D.C., Nov. 9-10, 2002.

Reviewing

Journals:

Cognitive Science
Cognition and Instruction
Cognitive Development
Artificial Intelligence Journal
Education Evaluation and Policy Analysis
Journal of Research in Science Teaching
Cognitive Psychology
Journal of Experimental Child Psychology
Journal of College Mathematics
Journal of Experimental Psychology: General
Journal of Research in Science Teaching
Journal of Research in Mathematics Education
Communications of the Association of Computing Machinery
Journal of the Learning Sciences
Interactive Learning Environments
American Educational Research Journal
International Journal of Science Education
International Journal of Computers for Mathematical Learning
Human Development

Publishers:

M.I.T. Press
 Bradford Books
 Addison-Wesley
 Benjamin-Cummings
 Lawrence Erlbaum Associates
 Scholastic Productions, Scientific advisor for "The Magic Schoolbus"

Foundations and Funding Agencies:

National Science Foundation (Materials Development, Knowledge and Database Systems, Interactive Systems, Memory and Cognitive Processes, Research on Learning and Education, Graduate Training Programs (GRT, IGERT) and other Programs).
 Panel for the Program in Teaching and Learning, National Science Foundation, Washington, D.C.: 4 panels, 1991-1993.
 United States-Israel Binational Science Foundation.
 Israel National Science Foundation.
 The Spencer Foundation (Major Grants, Post-Doctoral Fellowships)
 Federal Government of Brazil.

Recent NSF Review Panels: IGERT, ROLE (3 panels). 1999-2002.

Conferences:

- National Logo Conference Program Committee, 1984, 1985.
 Program Committee for the American Association of Artificial Intelligence Annual Conference, 1987.
 Program Committee for "Toward a Scientific Practice of Science Education," Berkeley, CA, January, 1987 (NSF Sponsored).
 Program Committee for the International Conference on Intelligent Tutoring Systems, Montreal, June, 1988.
 Reviews for the American Educational Research Association Annual Conference, 1986-present.
 Program Committee for the Conference on Learning Sciences, Chicago, August, 1991.
 Co-Organizer and Program Committee, NATO Advanced Workshop on the Design of Computational Media to Support Exploratory Learning. Asilomar, CA, October, 1993.
 Program Committee for the Conference on Learning Sciences, Chicago, July, 1996.
 Program Committee for the International Conference on Computer Support for Collaborative Learning 1997, University of Toronto, Fall 1997.
 Program Committee for the IEEE End-User Programming Workshop. Stresa Italy, June, 2001.
 Organizational Committee for "Fostering the Coevolution of mathematical learning practices and technologies." Institute of Education, University of London, London, England, March, 2001.
 Program Committee for the Fifth International Conference of the Learning Sciences, Seattle, Washington, October, 2002.
 Program Committee for the Annual Meeting of the Cognitive Science Society, Boston, August, 2003.

Publications

Books and Monographs:

- Abelson, H. and diSessa, A. A. (1981). *Turtle Geometry: The computer as a medium for exploring mathematics*. Cambridge, MA: MIT Press. Subsequently produced in paperback (1985); editions translated into Spanish, Italian, Japanese, Hungarian and Polish.
- Gardner, M., Greeno, J. G., Reif, F., Schoenfeld, A., diSessa, A. A. & Stage, E., (1990). *Toward a Scientific Practice of Science Education*, Hillsdale, NJ: Lawrence Erlbaum. Edited Volume.
- diSessa, A. A. (1993). Toward an epistemology of physics. *Cognition and Instruction*, **10** (2-3), 105-225; Responses to commentary, 261-280. (*Cognition and Instruction*, Monograph No. 1.) The monograph includes: an introduction by Editor Lauren Resnick; commentary by F. Marton, N. Ueno, M. Chi and J. Slotta; and my responses (Between brain and behavior: Response to Ference Marton; The pot calls the kettle unsituated: Response to Naoki Ueno; Ontologies in pieces: Response to M. Chi and J. Slotta).

diSessa, A. A., Hoyles, C., Noss, R., with Edwards, L. (1995). *Computers and Exploratory Learning*. Berlin: Springer Verlag. Edited Volume.

diSessa, A. A. (2000). *Changing Minds: Computers, Learning, and Literacy*. Cambridge, MA: MIT Press.

Research Journal Articles:

diSessa, A. A. (1974). A quantization of fields with mass in two-dimensional Euclidian space. *Physical Review C*, 2926-2932.

diSessa, A. A. (1974). Quantization on hyperboloids and full space-time field expansion. *Journal of Mathematical Physics*, 15, 1892-1900.

Abelson, H., diSessa, A. A., and Rudolph, L. (1975). Velocity space and the geometry of planetary orbits. *American Journal of Physics*, 43, 579-589.

diSessa, A. A. (1980). Momentum flow as an alternative perspective in elementary mechanics. *American Journal of Physics*, 48, 365-369.

diSessa, A. A. (1980). Computation as a physical and intellectual environment in learning physics. Invited article for special issue of *Computers and Education*, 4(1), 67-75.

diSessa, A. A. (1981). An elementary formalism for general relativity. *American Journal of Physics*, 49, 401-411.

diSessa, A. A. (1982). Unlearning Aristotelian physics: A study of knowledge-based learning. *Cognitive Science*, 6, 37-75.

diSessa, A. A. (1985). A principled design for an integrated computational environment. *Human-Computer Interaction*, 1(1), 1-47.

diSessa, A. A. (1986). Artificial worlds and real experience. Invited article for a special issue on Artificial Intelligence and Education, *Instructional Science*, 14(3-4), 207-227. (Appeared previously as "Computers and experience in learning science," in *Theoretical Papers from Logo 85*, MIT, Cambridge, MA, July, 1985.)

diSessa, A. A. and Abelson, H. (1986). Boxer: A reconstructible computational medium. Invited paper for a special issue on Teaching Programming, *Communications of the ACM*, 29(9), 859-868.

diSessa, A. A. (1987). The third revolution in computers in education. *Journal of Research in Science Teaching*, 24(4) 343-367. (This is an edited version of a report of the same name commissioned by the Committee on Mathematics, Science and Technology of the Commission on Behavioral and Social Sciences and Education, National Academy of Sciences, October, 1984.)

- diSessa, A. A., Abelson, H., & Ploger, D. (1991). An Overview of Boxer. *Journal of Mathematical Behavior*, 10(1), 3-15. This is the lead chapter in a special issue devoted to work on Boxer, composed of 5 papers from our group.
- Adams, S. and diSessa, A. A. (1991). Learning by cheating: Children's inventive use of a Boxer microworld. *Journal of Mathematical Behavior*, 10(1), 79-89.
- diSessa, A. A. , Hammer, D., Sherin, B. & Kolpakowski, T. (1991). Inventing graphing: Meta-representational expertise in children. *Journal of Mathematical Behavior*, 10(2), 117-160.
- Smith, J. P., diSessa, A. A., & Roschelle, J. (1993). Misconceptions reconceived: A Constructivist analysis of knowledge in transition. *Journal of the Learning Sciences*, 3(2), 115-163.
- Sherin, B., diSessa, A. A., & Hammer, D. M. (1993). Dynaturtle revisited: Learning physics through collaborative design of a computer model. *Interactive Learning Environments*, 3(2), 91-118.
- Linn, M. C., diSessa, A., Pea, R. D., & Songer, N. B. (1994). Can research on science learning and instruction inform standards for science education? *Journal of Science Education and Technology*, 4(3), 7-15.
- diSessa, A. A. (tr. A. Chiocciariello) (1995). Insegnare il Moto con Boxer. *Technologie Didattiche*, n. 7, 21-32. (Revised and translated version of "The Many Faces of a Computational Medium," in diSessa, et al., *Computers and Exploratory Learning*.)
- diSessa, A. A. (1996). Faculty Opponent Review: On Mole and Amount of Substance: A Study of the Dynamics of Concept Formation and Concept Attainment. *Pedagogisk Forskning i Sverige*. 1(4), 233-243.
- diSessa, A. A. & Sherin, B. (1998). What changes in conceptual change? *International Journal of Science Education*, 20(10), 1155-1191.
- Friedman, J. & diSessa, A. A. (1999). What should students know about technology? The case of scientific visualization. *International Journal of Technology and Science Education*, 9(3), 175-196.
- diSessa, A. A. & Sherin, B. (2000). Meta-Representation: An Introduction. *Journal of Mathematical Behavior*, 19(4), 385-398. (Introductory article in a special issue on meta-representational competence consisting of 5 papers from our NSF-sponsored project work.)
- Cobb, P., Confrey, J., diSessa, A., Lehrer, R., & Schauble, L. (2003). Design Experiments in Education Research. *The Educational Researcher*, 32(1), 9-13.
- Bamberger, J., & diSessa, A. (2003). Music as embodied mathematics: A study of a mutually informing affinity. *International Journal for Computers and Mathematics Learning*, 8, 123-160.
- diSessa, A. A. (2004). Meta-representation: Native competence and targets for instruction. *Cognition and Instruction*, 22(3), 293-331.

- diSessa, A. A., & Cobb, P. (2004). Ontological innovation and the role of theory in design experiments. *Journal of the Learning Sciences*, 13(1), 77-103.
- diSessa, A. A., Gillespie, N., & Esterly, J. (2004). Coherence vs. fragmentation in the development of the concept of force. *Cognitive Science*, 28, 843-900.
- diSessa, A. A. (2004). Introduction to the special issue on component computing in education. *Interactive Learning Environments*, 12(1-2), 1-6.
- diSessa, A. A., Azevedo, F., & Parnafes, O. (2004). Issues in component computing: A synthetic review. *Interactive Learning Environments*, 12(1-2), 109-159.
- diSessa, A. A. (2004). Reflections on component computing from the Boxer Project's perspective. *Interactive Learning Environments*, 12(1-2), 161-165.
- Parnafes, O., & diSessa, A. A. (2005). Relations between types of reasoning and computational representations. *International Journal for Computers and Mathematics Learning*, 9(3), 251-280.

Book Chapters:

- diSessa, A. A. (1978). On learnable representations of knowledge: A meaning for the computational metaphor. In J. Lochhead and J. Clement (Eds.), *Cognitive Process Instruction*. Franklin Institute Press, 239-266.
- diSessa, A. A. (1983). Phenomenology and the evolution of intuition. In D. Gentner and A. Stevens (Eds.), *Mental Models*. Hillsdale, NJ: Lawrence Erlbaum, 15-33.
- diSessa, A. A. (1985). Learning about knowing. In E. Klein (Ed.), *Children and Computers*, New Directions for Child Development No. 28. San Francisco: Jossey-Bass Inc., 97-124.
- diSessa, A. A. (1986). Models of computation. In D. A. Norman and S. W. Draper (Eds.), *User Centered System Design: New Perspectives on Human-Computer Interaction*. Hillsdale, NJ: Lawrence Erlbaum, 201-218.
- diSessa, A. A. (1986). Notes on the future of programming: Breaking the utility barrier. In D. A. Norman and S. W. Draper (Eds.), *User centered system design: New perspectives on human-computer interaction*. Hillsdale NJ: Lawrence Erlbaum, 125-152. (An extended version of a paper that originally appeared in *Pre-Proceedings of Logo 84*, Cambridge, MA, June, 1984.)
- diSessa, A. A. (1986). Phenomenology and the evolution of intuition. In C. Janvier (Ed.), *Problems of representation in the teaching and learning of mathematics*. Hillsdale, NJ: Lawrence. (Selections from and commentary on the paper by the same name, previously published by Lawrence Erlbaum in *Mental Models*, 1983.)
- diSessa, A. A. (1986). Principles of design for an integrated computational environment for education. In B. Sendov and I. Stanchev (Eds.), *Children in an information age: Tomorrow's problems today (Selected papers from the international conference, Varna, Bulgaria, May 1985)*. NY:

- Pergamon, 97-109. An abridged version appears in *COM 3, Journal of the Computer Education group of Victoria, Australia*, **11** (4), 1985.
- diSessa, A. A. (1987). Artificial worlds and real experience. In R. Lawler and M. Yazdani (Eds.) *Artificial intelligence and education*. Norwood, NJ: Ablex, 55-77. (Reprinted from the article of the same name which appeared in *Instructional Science*, **14**, 1986.)
- diSessa, A. A. (1987). Reference and data construction in Boxer. In M. J. Tauber and P. Gorny (Eds.), *Visual Aids in Programming*. Heidelberg: Springer, 151-162.
- diSessa, A. A., and Ploger, D. (1987) Cognition and science education. Commissioned by the American Association for the Advancement of Science for the National Forum for School Science yearbook, *The Year in School Science*. Washington, D.C.: AAAS, 15-39.
- diSessa, A. A. (1988). Knowledge in pieces. In G. Forman and P. Pufall (Eds.), *Constructivism in the Computer Age*. Hillsdale, NJ: Lawrence Erlbaum, 49-70.
- diSessa, A. A. (1988). What it will mean to be educated in 2020. In R. Nickerson & P. Zodiates (Eds.), *Technology in Education: Looking Toward 2020*. Hillsdale, NJ: Lawrence Erlbaum, 43-66.
- diSessa, A. A. & Abelson, H. (1989). Boxer: A reconstructible computational medium. In E. Soloway and J. C. Spohrer (Eds.) *Studying the Novice Programmer*. Hillsdale, NJ: Lawrence Erlbaum, 467-481. (Reprinted from the article of the same name in the *Communications of the ACM*, 1986.)
- diSessa, A. A. (1990). Social niches for future software. In M. Gardner, J. Greeno, F. Reif, A. Schoenfeld, A. diSessa & E. Stage (Eds.), *Toward a Scientific Practice of Science Education*, Hillsdale, NJ: Lawrence Erlbaum, 301-322.
- diSessa, A. A. (1991). New intelligence with information technology. In H. Rowe (Ed.) *Intelligence: Reconceptualization and Measurement*, Hillsdale, NJ: Lawrence Erlbaum, 245-265.
- diSessa, A. A. (1991). Local sciences: Viewing the design of human-computer systems as cognitive science. In J. M. Carroll (Ed.), *Designing Interaction: Psychology at the Human-Computer Interface*. NY: Cambridge University Press, 162-202.
- diSessa, A. A. (1991). Epistemological micromodels: The case of coordination and quantities. In J. Montangero & A. Tryphon (Eds.), *Psychologie génétique et sciences cognitives*. (Volume from the Eleventh Advanced Course.) Geneva: Archives Jean Piaget, 169-194.
- diSessa, A. A. (1992). Images of learning. In E. De Corte, M. C. Linn, H. Mandl, and L. Verschaffel (Eds.), *Computer-based learning environments and problem solving*. Berlin: Springer, 19-40.
- diSessa, A. A. (1994). Speculations on the foundations of knowledge and intelligence. In D. Tirosh (Ed.), *Implicit and Explicit Knowledge: An Educational Approach*. Norwood, NJ: Ablex, 1-54.

- diSessa, A. A. (1994). Comments on Ed Dubinsky's chapter. (The theory and practice of capitalizing on diverse views concerning learning.) In A. Schoenfeld (Ed.), *Mathematical thinking and problem solving*. Hillsdale, NJ: Lawrence Erlbaum Associates, 248-256.
- diSessa, A. A., (1995). The many faces of a computational medium. In A. diSessa, C. Hoyles, R. Noss, with L. Edwards (Eds.), *Computers and Exploratory Learning*. Berlin: Springer Verlag, 337-359.
- diSessa, A. A., (1995). Epistemology and systems design. In A. diSessa, C. Hoyles, R. Noss, with L. Edwards (Eds.), *Computers and Exploratory Learning*. Berlin: Springer Verlag, 15-29.
- diSessa, A. A., Hoyles, C., Noss, R., and Edwards, L. (1995). Computers and exploratory learning: Setting the scene. In A. diSessa, C. Hoyles, R. Noss, with L. Edwards (Eds.), *Computers and Exploratory Learning*. Berlin: Springer Verlag, 1-12
- diSessa, A. A. (1995). Designing Newton's laws: Patterns of social and representational feedback in a learning task. In R.-J. Beun, M. Baker, & M. Reiner (Eds.), *Dialogue and Interaction: Modeling Interaction in Intelligent Tutoring Systems*. Berlin: Springer-Verlag, 105-122.
- diSessa, A. A. (1995). Collaborating via Boxer. In L. Burton and B. Jaworski (Eds.), *Technology – A Bridge between Teaching and Learning Mathematics*. Bromley, Kent, UK: Chartwell-Bratt, 69-94.
- diSessa, A. A. (1996). What do "just plain folk" know about physics? In D. R. Olson and N. Torrance (Eds.), *The Handbook of Education and Human Development: New Models of Learning, Teaching, and Schooling*. Oxford, UK: Blackwell Publishers, Ltd., 709-730.
- diSessa, A. A., & Minstrell, J. (1998). Cultivating conceptual change with benchmark lessons. In J. G. Greeno & S. V. Goldman (Eds.), *Thinking Practices in Mathematics & Science Learning*. Mahwah, NJ: Lawrence Erlbaum Associates, 155-187.
- diSessa, A. A. (2000). Does the mind know the difference between the physical and social worlds? In L. Nucci, G. Saxe, and E. Turiel (Eds.), *Culture, Development and Knowledge* (pp. 141-166). Mahwah, NJ: Lawrence Erlbaum Associates.
- diSessa, A. A. (2002). Students' criteria for representational adequacy. In K. Gravemeijer, R. Lehrer, B. van Oers, & L. Verschaffel (Eds.), *Symbolizing, modeling and tool use in mathematics education* (pp. 105-129). Dordrecht: Kluwer.
- diSessa, A. A. (2002). Why "conceptual ecology" is a good idea. In M. Limón & L. Mason (Eds.), *Reconsidering conceptual change: Issues in theory and practice* (pp. 29-60). Dordrecht: Kluwer.
- diSessa, A. A., Elby, A., & Hammer, D. (2002). J's epistemological stance and strategies. In G. Sinatra and P. Pintrich (Eds.), *Intentional conceptual change* (pp. 237-290). Mahwah, NJ: Lawrence Erlbaum Associates.

- diSessa, A. A. (2002). Science learning: What knowledge should constitute the goals of instruction? In J. W. Guthrie, J. M. Braxton, J. M. Cooper, S. R. Goldman, S. P. Heynerman, J. E. Koppich, & C. Kridel (Eds.), *The encyclopedia of education, second edition*. New York: Macmillan Reference.
- diSessa, A. A. (2004). How should we go about attributing knowledge to students? In E. Redish and M. Vicentini (eds.), *Proceedings of the International School of Physics "Enrico Fermi": Research on physics education* (pp. 117-135). Amsterdam: ISO Press/Italian Physics Society.
- diSessa, A. A. (2004). Contextuality and coordination in conceptual change. In E. Redish and M. Vicentini (eds.), *Proceedings of the International School of Physics "Enrico Fermi": Research on physics education* (pp. 137-156). Amsterdam: ISO Press/Italian Physics Society.
- diSessa, A. A. (2004). Principles of teaching physics with computers. In E. Redish and M. Vicentini (eds.), *Proceedings of the International School of Physics "Enrico Fermi": Research on physics education* (pp. 157-173). Amsterdam: ISO Press/Italian Physics Society.
- Sherin, B., Azevedo, F., & diSessa, A. (2005). Exploration zones: A framework for describing the emergent structure of learning activities. In Rosebery, A., Warren, B., Nemirovsky, R., & Solomon, J. (Eds.) *Everyday matters in science and mathematics* (pp. 329-366). Wahwah, NJ: Lawrence Erlbaum Associates.
- diSessa, A. A., & Wagner, J. F. (2005). What coordination has to say about transfer. In J. Mestre (ed.), *Transfer of learning from a modern multi-disciplinary perspective* (pp. 121-154). Greenwich, CT: Information Age Publishing.
- diSessa, A. A. (in press). A history of conceptual change research: Threads and fault lines. In K. Sawyer (ed.), *Cambridge handbook of the learning sciences*. Cambridge, UK: Cambridge University Press.
- diSessa, A. A. (in press). Systemics of learning for a revised pedagogical agenda. In R. Lesh (ed.), *Foundations for the future in mathematics education*. Mahwah, NJ: Lawrence Erlbaum Associates.

Conference Papers:

- diSessa, A. A. (1975). ORBIT: A mini-environment for exploring orbital mechanics. In O. Lecarme and R. Lewis (Eds.), *Proceedings of the Second IFIP World Conference on Computers and Education*. Marseilles: North Holland Press, 359-365.
- diSessa, A. A. (1982). The role of experience in models of the physical world. In *Proceedings of the Third Annual Conference of the Cognitive Science Society*, Berkeley, CA, 101-102.
- diSessa, A. A. (1983). The computer and mathematical experience. In M. Zweng, et al. (Eds.), *Proceedings of the Fourth International Congress on Mathematics Education*. Boston: Birkhauser, 632-636.

- diSessa, A. A. (1989). A child's science of motion: Overview and first results. In U. Leron and N. Krumholtz (Eds.), *Proceedings of the Fourth International Conference for Logo and Mathematics Education*. Haifa, Israel: Israeli Logo Center, Technion – Israel Institute of Technology, 211-231.
- diSessa, A. A. (1991). If we want to get ahead, we should get some theories. In R. G. Underhill (Ed.), *Proceedings of the Thirteenth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (Plenary Lecture and Reaction.) Vol. 1. Blacksburg, VA: Virginia Tech, 220 -239.
- Anker, M., Ploger, D., & diSessa, A. (1992). Hyper-programming: Programming with hypertext in Boxer. *Proceedings of HyperOz '92: A Workshop on Hypertext Activities in Australia*.
- diSessa, A. A. (1993). Collaborating via Boxer. In P. Georgiadis, G. Gyftodimos, Y. Kotsanis, & C. Kynigos (Eds.), *Logo-like learning environments: Reflection & prospects*. Proceedings of the fourth European Logo conference. Athens, Greece: Doukas School, 351-357. (This is an early version of the paper by the same name published in L. Burton and B. Jaworski (eds.), *Technology – A Bridge between Teaching and Learning Mathematics*.)
- diSessa, A. A. (1993). The many faces of a computational medium: Teaching the mathematics of motion. In B. Jaworski (Ed.), *Technology and mathematics teaching*. Proceedings of the international conference. Birmingham, England: University of Birmingham, 23-38. (This is an early version of the paper by the same name published in *Computers and Exploratory Learning*, diSessa, Hoyles, Noss and Edwards, eds.)
- diSessa, A. A. (1997). Open toolsets: New ends and new means in learning mathematics and science with computers. In E. Pehkonen (Ed.), *Proceedings of the 21st Conference of the International Group for the Psychology of Mathematics Education*, Vol. 1. Lahti, Finland, 47-62.
- diSessa, A. A. (1997). Twenty reasons why you should use Boxer (instead of Logo). In M. Turcsányi-Szabó (Ed.), *Learning & Exploring with Logo: Proceedings of the Sixth European Logo Conference*. Budapest Hungary, 7-27.
- Parnafes, O., & diSessa, A. (2003). The representational effect in a computer-based learning activity. P. Bell & R. Stevens (Eds.), *Proceedings of the Fifth International Conference of the Learning Sciences*.
- diSessa, A. A., Gillespie, N., & Esterly, J. (2003). Naïve meanings of force: Coherence vs. fragmentation. *Proceedings of the Annual Conference of the Cognitive Science Society*, Boston, MA.

Other Publications:

- diSessa, A. A. and White, B. (1982, August). Learning physics from a dynaturtle. *BYTE Magazine*, 324.
- diSessa, A. A. and Globerson, T. (1984, June). The effect of age and cognitive style on children's intuitions of motion. A paper presented at *Logo 84*, Cambridge, MA.

- diSessa, A. A. (1986). From Logo to Boxer. *Australian Educational Computing*, **1** (1), 8 – 15. (A version also appeared in *Lectures at the Monash Mathematics Education Centre*, Monash University, Clayton Victoria Australia.)
- Ploger, D. & diSessa, A. A. (1987). Rolling dice: Exploring probability in the Boxer computer environment. Boxer Technical Report E1. Berkeley, CA: School of Education, University of California.
- Ploger, D. & diSessa, A. A. (1987). Hyper-programming in Boxer. Boxer Technical Report G2. Berkeley, CA: School of Education, University of California.
- diSessa, A. A. (1988). Boxer: Un mondo di micromondi. *Compu Scuola*, **28**(4), 50-57.
- diSessa, A. A. (1989). Beyond problem solving. *The Educator*. **3**(3), 8-11.
- diSessa, A. A., & Schoenfeld, A. (1990). The Impact of Technology. In M. Gardner, J. Greeno, F. Reif, A. Schoenfeld, A. diSessa & E. Stage (Eds.), *Toward a Scientific Practice of Science Education*, Hillsdale, NJ: Lawrence Erlbaum, 265-266.
- diSessa, A. A. (1990). The Computer Revolution in the Classroom, *Teaching at Berkeley*, No. 23, p. 3.
- Hammer, D. and diSessa, A. A. (1990). Children are not abstractions. *The Physics Teacher*, **28**(7), 440. Letter to the Editor.
- diSessa, A. A. (1996). [For the Campus Computing and Communications Policy Board, Instructional Technology Subcommittee] Steps Toward Becoming a Technologically Wise University: Strategic Planning for Technology's Use in Instruction. <http://socrates.berkeley.edu/~cccpb-it/>
- diSessa, A. A. (1999). How should students learn? *Journal of Computer Documentation*, **23**(2), 14-18.
- diSessa, A., A. (1999). Twenty reasons why you should use Boxer (Instead of Logo). *The Logo Exchange*, **17**(3), 7-19. (Reprinted from the paper of the same name published in the Sixth European Logo Conference.)
- diSessa, A. A., (2001). Inventing graphing: A video case study. Unpublished CD ROM. The Boxer Group, University of California, Berkeley.
- diSessa, A. A. (2001). Overview of Component Project Profiles. Web-posted Technical Report. University of California, Berkeley: The Boxer Project. ftp://soe.berkeley.edu/pub/boxer/Distribution/Overview_of_Profiles.pdf
- Parnafes, O., & diSessa, A. A. (2001). A Profile of the ESCOT Educational Component Software Project. Web-posted Technical Report. University of California, Berkeley: The Boxer Project. ftp://soe.berkeley.edu/pub/boxer/Distribution/ESCOT_Profile.pdf

diSessa, A. A. (2001). Component Computing in a Computational Medium. Web-posted Technical Report. University of California, Berkeley: The Boxer Project.
ftp://soe.berkeley.edu/pub/boxer/Distribution/Boxer_Profile.pdf

Invited Lectures, Presentations, Meetings 1991 - Present

American Educational Research Association, Annual Meeting, Chicago, April , 1991.

Symposium on Micro-analysis in Education Research, Chair and Commentator.

Symposium on Boxer: Computational Representations in Science Education, Chair.

Symposium on Conceptual Change. Commentator.

Boxer Demonstration.

Epistemological Micromodels. Technical Education Research Center. Cambridge, MA, June 3, 1991.

Boxer: An Approach to Computational Media and New Literacies. University of LaVal. Quebec City, Quebec, Canada, June 7, 1991.

Computational Media and Learning Science. Lawrence Berkeley Laboratory Teacher's Workshop on Images in Science Education. Kihei, Maui, Hawaii, July 9, 1991.

Reflections on Teaching with a Computational Medium. Institute for Research on Learning. Palo Alto, CA, July 16, 1991.

Workshop on Patterns of Thinking. Harvard University, Project Zero. Cambridge, MA, July 20-21, 1991.

Computational Media. Keynote address at the International Conference on the Learning Sciences, Northwestern University, Evanston, Illinois, August 6, 1991.

Three Issues Concerning Mediated Discussions. The first meeting of the Text and Discourse Analysis Society, University of Chicago, Chicago, Ill, August 7, 1991.

Surprising Expertise in Children. Presentation at the American Psychological Association special mini-conference on psychological research and education, San Francisco, August 18, 1991.

Carnegie Workshop on Intellectual Practice: Science Education. Institute for Research on Learning. Palo Alto, Feb. 14-16, 1992.

If We Want to Get Ahead, We Should Get Some Theories. San Diego State University, Center for Research on Mathematics and Science Education. San Diego, CA, March 20, 1992.

American Educational Research Association, Annual Meeting, San Francisco, April 20-25, 1992.

Symposium on Boxer: Programming – A New Paradigm in Instructing Physics, Chair.

Symposium on Conceptual Change. Commentator.

Boxer Demonstration.

Carnegie Workshop on Intellectual Practice: Learning Environments. Institute for Research on Learning. Palo Alto, May 1-3, 1992.

Panel on Logo-like Software and Learning Mathematics, and a Workshop on Boxer. Logo and Mathematics Education Conference, Vancouver, B.C., Canada, July 16-20, 1992.

Social and Physical Feedback in Classroom Conversations for Conceptual Change. NATO Advanced Workshop on Natural Dialog and Interactive Student Modeling. Varenna, Italy. Oct. 17-20, 1992.

National Board Meeting, Center for Development of Teaching, Educational Research Center. Watertown, MA. Oct. 28, 1992.

Cultivating Conceptual Change in the Classroom. (with J. Minstrell) Carnegie Symposium on Thinking Practices, Palo Alto, CA, Nov. 12-14, 1992.

Learning with Boxer. Apple Workshop on Computer Learning Environments. Santa Cruz, CA. Feb. 26-27, 1993.

Misconceptions in Open and Collaborative Learning Environments. Conference on Cognition and Instruction, Center for Advanced Study in the Behavioral Sciences. Stanford, CA, March 1-2, 1993.

American Educational Research Association, Annual Meeting, San Francisco, April 12-16, 1993.

Panel on Science Standards (sponsored by SIG Education in Science and Technology), Chair and Moderator.

Programming as an Extended Literacy. Symposium: Is Programming Obsolete in the Classroom?

J's Epistemological Stance and Strategies. Symposium on Metacognition and Conceptual Change.

The Function Concept and the Development of a Constructivist Research Program. Discussant.

Learning about Motion with a Computational Medium. University of California, Santa Cruz, May 13, 1993.

Boxer: A Computational Medium. Apple Computer. Sunnyvale, CA. May 26, 1993.

National Board Meeting, Center for Development of Teaching, Educational Research Center. Watertown, MA, June 2, 1993.

Toward a Knowledge-Level Theory of Learning. Plenary address at the Annual Meeting of the Cognitive Science Society. Boulder, CO, June 20, 1993.

Objects in Boxer. Royal Melbourne Institute of Technology Boxer Workshop. Melbourne, Australia, July 13-17, 1993.

Collaborating via Boxer. The Fourth European Logo Conference. Athens, Greece, August 28-31, 1993.

The Many Faces of a Computational Medium: Teaching the Mathematics of Motion. The International Conference on Technology and Mathematics Teaching. University of Birmingham, Birmingham, England, September 17-20, 1993.

Reflections on Experience with a Computational Medium. NATO Advanced Workshop on Open Computer Environments and Exploratory Learning, Asilomar, CA, Oct. 3-7, 1993.

The Appropriation of Advanced Technology into Schools. Center for the Development of Teaching, EDC, Newton, MA, Oct. 13, 1993.

Misconceptions Reconceived. American Association of Physics Teachers Annual Meeting, San Diego, CA, Jan. 7, 1994.

What Went Wrong in Misconceptions Research? TERC, Cambridge, MA, Jan. 12, 1994.

NSF Conference on Cognitive Science and Education, Philadelphia, PA, May 5-8, 1994.

National Board Meeting, Center for Development of Teaching, Educational Research Center. Watertown, MA, June 1, 1994.

NSF Project Directors Meeting, Applications of Advanced Technologies. Washington, D.C., July 6-8, 1994.

New Approaches to Learning about Evolution Workshop. MIT Media Lab. Cambridge, MA, July 9, 1994.

Apple Computer Learning Concepts Group Offsite Workshop. Apple Hill Center for Music, New Hampshire, Aug. 23-26, 1994.

What Do "Just Plain Folk" Know About Physics? Address as Distinguished Visitor, Cognitive Science Program, Colorado University, Boulder, CO, October 21, 1994.

New System Architectures, New Cultures and New Literacies. Address as Distinguished Visitor, Cognitive Science Program, Colorado University, Boulder, CO, October 20, 1994.

National Board Meeting, Center for Development of Teaching, Educational Research Center. Watertown, MA, Dec. 9, 1994.

Computational Media and New Literacies, EduTech Colloquium, Georgia Tech., Atlanta, GA, March 2, 1995.

What do "just plain folk" know about physics? Cognitive Science Colloquium, Georgia Tech., Atlanta, GA, March 3, 1995.

American Educational Research Association, Annual Meeting, San Francisco, April 18-22, 1995.

Discrete Models and Radical Reformulation in Physics Instruction (with B. Sherin)

Symposium on Artifacts of Learning (commentator)

What Do "Just Plain Folk" Know About Physics? "Friday Forum" (Cognitive Science, AI, Learning Sciences) Colloquium, Northwestern U., Evanston, IL, May 5, 1995.

National Board Meeting, Center for Development of Teaching, Educational Research Center. Watertown, MA, June 2, 1995.

Revising Our Views of Knowledge...Once Again: The Case of Commonsense Knowledge in Physics. University of Delaware, September 28, 1995.

National Board Meeting, Center for Development of Teaching, Educational Research Center. Watertown, MA, Dec. 15, 1995.

Boxer and Tool-rich Learning Environments. Educom: National Learning Infrastructure Initiative Meeting, New Orleans, January 22, 1996.

American Educational Research Association, Annual Meeting, New York, April 8-11, 1996.

What Kind of an Interaction is a Clinical Interview? Symposium – Cognitivism vs. Situated Cognition: A Grounded Debate

Cognitivism vs. Situated Cognition: A Grounded Debate. Organizer and Chair (recorded symposium).

Symposium on Learning via Image Processing. Commentator.

Symposium on Conversations over Artifacts Commentator.

Seminar on P-Prims Theory, Department of Education, Gothenburg University, Gothenburg, Sweden, May 30, 1996.

Intuitive Physics and Conceptual Change, Department of Education, Gothenburg University, Gothenburg, Sweden, May 30, 1996.

Computational Media and New Literacies: Making the Most of Computers in Education. Chancellor's Forum, University of California at Berkeley, August 29, 1996.

National Board Meeting, Center for Development of Teaching, Educational Research Center. Watertown, MA, Sept. 27, 1996.

Toward a Knowledge Level Theory of Learning. European Science Foundation Workshop on Learning in Humans and Machines, Belgium, October 8, 1996.

National Academy of Education Annual Meeting, Chicago, October 24, 25, 1996.

Rescuing the Powerful Ideas. An NSF-sponsored invitational workshop at MIT Endicott House, Dedham, MA, November 15-17, 1996.

Workshop on Collaborative Learning Support for Virtual Communities. SRI International, Menlo Park, California, January 16-17, 1997.

Children as Designers: Can Electronic Media Make Our Children Smarter? Institute for the Academic Advancement of Youth, Young Students Discovery Seminar, Lawrence Hall, Berkeley, CA, February 1, 1997.

Consulting with the Modeling Project, National Center for Science Achievement, University of Wisconsin, Madison, February 7-8, 1997.

Computational Media and New Literacies: Learning More and Better; also seminar on Learning Motion with Boxer. Ohio State University "Technology for Communities of Learning" Seminar Series, Columbus, Ohio, February 17-18, 1997

Computational Media and New Literacies: Cognitive, Social and Material Perspectives. Cognitive Science Department, University of California San Diego, La Jolla, CA, February 28, 1997.

Computational Media and New Literacies: Cognitive, Social and Material Perspectives; also several informal seminars. Florida Atlantic University, Boca Raton and Davie campuses. March 13-15, 1997.

American Educational Research Association Annual Meeting, Chicago, March 27, 1997.

From Pictures to Scientific Representations: Studies in Meta-Representational Competence. Chair and Organizer (symposium session).

Meta-Representational Competence in Image Processing: The Role of Technology (with Jeffrey Friedman). Paper presented at the symposium, From Pictures to Scientific Representations: Studies in Meta-Representational Competence.

Does the Mind Know the Difference Between the Physical and Social Worlds? Invited plenary presentation at the Jean Piaget Society annual meeting. Santa Monica, CA, June 19, 1997.

Open Toolsets: New Ends and New Means in Learning Mathematics and Science with Computers. Invited plenary presentation at the 21st Conference of the International Group for the Psychology of Mathematics Education. Lahti, Finland, July 15, 1997.

Twenty Reasons You Should Use Boxer. EuroLogo 97. Budapest, Hungary, August 22, 1997.

Open Toolsets: A Technological Basis for Really Improved Learning. Computer Science, University of Colorado, Boulder, CO, September 24, 1997.

What Does It Mean to Know? National Academy of Education Annual Meeting, Boulder, CO, September 26, 1997.

What Do Just Plain Folks Know About Physics? Center for Advanced Study in the Behavioral Sciences, Stanford, CA, February 23, 1998.

Comments on Computational Literacies. National Research Council, Computer Science and Telecommunications Board, Committee on Information Technology Literacy, Washington, D.C., April 3, 1998.

American Educational Research Association Annual Meeting, San Diego, CA, April 13-17, 1998.

From Pictures to Scientific Representations II: Investigating and Fostering Students' Representational Competence. Chair (symposium session).

Challenges and Opportunities of a Modeling Curriculum. Commentator (symposium session).

Using Science and Design Experiments to Understand Innovative Uses of Technology in Classrooms. Commentator (symposium session).

Disney/UCLA Learning Lab Workshop. UCLA School of Education, LA, CA, April 19, 1998.

Meta-Representation: Native Competence and Technological (and other) Support for Learning. Freudenthal Institute, Utrecht, The Netherlands, June 17-19, 1998.

Learning to "See" Like a Scientist. International Association of Applied Psychology. San Francisco, August 13, 1998.

National Academy of Education Annual Meeting, Palo Alto, October 15, 16, 1998. (Commentator, Spencer/NAE Fellows session.)

What Changes in Conceptual Change? European Association for Research on Learning and Instruction, Workshop on Conceptual Change. Cercidilla, Spain, Nov. 5-7, 1998.

Computational Media and New Literacies: Cognitive, Social and Material Perspectives. Cognition and Development Seminar, University of California, Berkeley. April 12, 1999.

American Educational Research Association Annual Meeting, Montreal, April 19-23, 1999.

Islands of Truth and Wisdom: How Many Epistemologies Do We Need? Organizer, Chair, and Participant (invited symposium session).

Students' Criteria for Representational Adequacy. Paper presented in the symposium "Teaching and Learning about Representations."

Why Cognitive Ecology is a Good Idea. Paper presented in the symposium "Surveying the Conceptual Landscape: New Views of Conceptual Change.

What Do "Just Plain Folks" Know about Physics? Aoyama Gakuin University, Tokyo, Japan, May 25, 1999.

What Changes in Conceptual Change? Keio University, Tokyo, Japan, May 26, 1999.

A Span of "Concepts": From P-Prims to Coordination Classes. Keio University, Tokyo, Japan, May 26, 1999.

Foundations of Conceptual Knowledge in Physics. Kyoto University, Kyoto, Japan, May 29, 1999.

NSF REPP Principal Investigators' Meeting. NSF, Arlington, VA, June 3-5, 1999.

What Cognitive Science Says about Learning (with Technology). NSF Workshop on Improving Undergraduate Education in the Mathematical and Physical Sciences Through Use of Technology. Arlington, VA, July 21, 1999.

Why the Concept of "Concept" Just Won't Do It: The Importance of Theory. American Association of Physics Teachers/Physics Education Research Conference, San Antonio, Texas, August 9, 1999.

Making Programming Easier. MindFest. MIT Media Lab, Cambridge, MA, October 23, 1999.

From Microworlds to Tool Sets: Why the Form of Software Matters. I³ Spring Days. Athens Greece, March 1, 2000.

Tracking the Inscrutable Knowledge Element: Revisiting the Problem of Knowledge at the Beginning of the 21st Century. Spencer/National Academy of Education Post-Doctoral Fellows Retreat, Cambridge, MA, March 10, 2000.

What Changes in Conceptual Change? Lawrence Hall of Science, Berkeley, CA, April 20, 2000.

American Educational Research Association Annual Meeting, New Orleans, April 24-28, 2000.

Researching Model-Based Instruction in Middle School Mathematics and Science: Discussion of a Collaborative Reform Effort. Commentator (symposium).

Designing Knowledge Representations and Epistemic Practices for Science Learning. Commentator (interactive symposium).

Multiple Perspectives on the Development of Multiplicative Reasoning. Commentator (symposium).

NSF ROLE Program Review Panel. Washington, D.C., June 25-27, 2000.

A Complex Systems Approach to Conceptual Change. Annual Meeting of the Cognitive Science Society. Philadelphia, August 13, 2000.

NSF IGERT Panel Review. Alexandria, VA, September 25-26, 2000.

Open Toolsets and Collaborative Design of Educational Learning Software. The Concord Consortium. Concord, MA, September 27, 2000.

Computational Media and New Literacies: Cognitive, Social and Material Perspectives. Tufts University. Medford, MA, September 27, 2000.

Inventing Graphing; A Video Case Study of Collaborative Design of Representations. NCISLA Case Study Workshop. Ashland, MA, November 1-3, 2000.

Computational Media and New Literacies: Cognitive, Social and Material Perspectives. Northwestern University. Evanston, Illinois, November 17, 2000.

Workshop on Component Computing in Education. (Sponsored by the SRI ESCOT Project.) Half Moon Bay, CA, January 7-10, 2001.

ROLE PI Meeting. National Science Foundation, Alexandria, VA, January 11-12, 2001.

Computational Media and New Literacies. American Association for the Advancement of Science. San Francisco, CA, February 19, 2001.

American Educational Research Association Annual Meeting, Seattle, WA, April 10-13, 2001.

Distributed Development: Social Perspectives on Computational Literacies. In "Turning Points in Educational Technology" (symposium).

Using a Case Study to Make General Points about Students' Intuitive Epistemologies. In "Intentional Conceptual Change" (symposium).

The Meaning of Force: Investigating Children's Changing Understanding Across Time and Context. N. Gillespie, A. diSessa, & J. Esterly. In "Student Learning and Understanding of Science" (symposium).

Constructing Process: Varieties of Programming Experience. Chair and Commentator (symposium).

International Journal for Computers and Mathematical Learning, Executive Editorial Board Meeting (conference planning), Sintra, Portugal, April 27-29, 2001.

Computational Media and New Literacies. Artificial Intelligence and Education Conference Keynote Address, San Antonio, Texas, May 23, 2001.

Advisory Panel, NSF-sponsored project: Technology & Model-Based Conceptual Assessment. Columbus, Ohio, May 28-29, 2001.

Meta-Representational Competence: An Introduction. Jean Piaget Annual Meeting, Berkeley, CA, June 1, 2001.

How Students Think about Physics When You Aren't Watching. Norwegian Physical Society Annual Meeting, Trondheim, Norway, June 14, 2001.

Computational Media and New Literacies: New Foundations for Thinking and Learning. Plenary Address at the Norwegian Physical Society Annual Meeting, Trondheim, Norway, June 14, 2001.

Fostering the Coevolution of Mathematical Learning Practices and Technologies, International Workshop. Institute of Education, University of London, London, UK, Sept. 6-9, 2001.

German-American International Conference: Research on Learning Technologies and Technology-Supported Education, Tübingen, Germany, May 11-12, 2001.

A Theory of Concepts: Theoretical and Practical Perspectives. Invited talk at the Annual Meeting of the American Association of Physics Teachers, Philadelphia, PA, January 21, 2002.

Workshop on Design Experiments, NSF-sponsored, Santa Fe, NM, March 14-17, 2002.

American Educational Research Association Annual Meeting, New Orleans, April 1-5, 2002.

Critical Issues in Component Computing, with F. Azevedo and O. Parnafes. In "Component Computing: Fad or Fabulous Innovation" (symposium).

Component Computing: Fad or Fabulous Innovation, symposium, chair and organizer.

What is the Form of Students' Ideas about Force?, with N. Gillespie and J. Esterly. In "The Nature of Students' Scientific Knowledge: Origins, Development, and Pedagogical Goals" (symposium).

The Nature of Students' Scientific Knowledge: Origins, Development, and Pedagogical Goals, symposium, chair and organizer.

Design Experimentation Research Methods: Advancing Theories of Context, Learning, and Design, symposium, discussant.

German-American International Conference: Research on Learning Technologies and Technology-Supported Education, Tampa Bay, FL, May 6-7, 2002.

Computational Media and New Literacies: The Big Picture for Learning with Computers. Information and Communication Technologies in Education: 3rd Hellenic Conference. University of the Aegean, Rhodes, Greece, Sept. 28, 2002.

Computational Media and New Literacies: Cognitive, Social and Material Perspectives. Walker-Ames public talk. University of Washington, Seattle, Feb. 18, 2003.

Computational Media and New Literacies: Cognitive, Social and Material Perspectives. Closing Plenary at CAL03 (Computer Aided Learning), Belfast, Ireland, April 10, 2003.

International School of Physics “Enrico Fermi,” Italian Physical Society. Varenna, Italy, July 15-25, 2003.

How Should We Go About Attributing Knowledge to Students?

Contextuality, Coordination, and Conceptual Change

Principles for Teaching Physics with Computers

Naïve Meanings of Force: Coherence vs. Fragmentation. *Annual Conference of the Cognitive Science Society*, Boston, MA, August 2, 2003.

National Academy of Education Annual Meeting and Post-Doctoral Fellows Retreat (roundtable leader), Boston, October 16-18, 2003.

Coherence vs. Fragmentation in Conceptual Development. Learning Lab Denmark, Copenhagen, April 28, 2004.

New Literacies – Halves and Wholes: What is Really Important about New Media? Keynote address for the symposium On-line Mathematical Investigation as a Narrative Experience. University of Western Ontario, London, Ontario, Canada, June 11, 2004.

Within Epsilon of Not Programming. Panel on “The Educational Value of Programming.” International Conference on the Learning Sciences, Santa Monica, CA, June 25, 2004.

What Coordination Has to Say about Transfer. American Association of Physics Teachers (Physics Education Research), Sacramento, CA, August 5, 2004.

Talks as part of PhD course I was in charge of at the Learning Lab Denmark, Copenhagen, Denmark, March 21-22, 2005.

What (and Why) Is Design-Based Research in Education?

A Personal View of Science and Design in the Real World: Issues from the Margin.

The Patterns Project: Explorations in the Foundations of Curriculum. Learning Lab Denmark, Copenhagen, Denmark, March 29, 2005.

American Educational Research Association Annual Meeting, Montreal, Canada, April 10-15, 2005.

Making Meaning with Representations: Contrasting Perspectives (symposium). Commentator.

On the Nature of Students’ Knowledge: Contrasting Epistemologies in Science and Mathematics Education Research (symposium). Commentator.

Differing Conceptualizations of Concepts: International Society of the Learning Sciences Panel. Presenter/Panel-member.

Can Students Discover Foundational Models of Science and Mathematics? ORD2005, Ghent, Belgium, May 31, 2005.

Design-Based Research: Theory and Practice. Keynote address, ORD2005, Ghent, Belgium, May 31, 2005.

Meta-Representation and Meso-Genesis. Jean Piaget Society Annual Meeting, Vancouver, Canada, June 4, 2005.

Computational Media and New Literacies. Keynote address. Children's Learning in a Digital World Conference. Brock University, St. Catherines, Ontario, Canada, August 19, 2005

Television and Radio Appearances

Interview for *Educational Computing*, PBS, aired in 1985.

Panel on the future of computers in Education, Bulgarian Television, 1985.

Interview for *New Frontiers in Science*, RAI Italian Television, 1987.

Radio Interview on Australian Broadcasting Corporation, August, 1988.

Interview for BBC/Open University course on computers and education, September, 1989.

Interview for PBS/KQED TechNation, September 1, 2000.

Interview concerning "laptop schools," TechTV, April, 2004.