Bibliography

Amin, T.G. (2001). A cognitive linguistics approach to the layperson's understanding of thermal phenomena. In Cienki, A., Luka, B.J., and Smith, M.B. (Eds.) *Conceptual and Discourse Factors in Linguistic Structure*. Stanford, CA: CSLI Publictions.

Anderson, J.R. and Thompson, R. (1989). Use of analogy in a production system architecture. In S. Vosniadu & A. Ortony (Eds.) *Similarity and Analogical Reasoning.* Cambridge, UK: Cambridge University Press.

Angier, N. (2004). Some blend in, others dazzle: The mysteries of animal colors. In *The New York Times*. July 20, 2004: Science Tuesday.

Atkins, L.J., Martinez, G., Seeley, L.H., and Seidler G.T. (2001). An experimental study of bond-orientational order in random dense packings of spheres. *Proceedings from the 2001 American Physical Society Meeting*.

Barsalou, L.W. (1983). Ad hoc categories. *Memory and Cognition 11(3)*, 211-227.

Barsalou, L.W. (1985). Ideas, Central Tendency, and Frequency of Instantiation as Determinants of Graded Structures in Categories. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 11(4)*, 629-654.

Barsalou, L.W. (1987). The instability of graded structure: Implications for the nature of concepts. In U. Neisser (Ed.), *Concepts and conceptual development: Ecological and intellectual factors in categorization* (pp. 101-140). Cambridge: Cambridge University Press.

Barsalou, L.W., & Wiemer-Hastings, K. (in press). Situating abstract concepts. In D. Pecher and R. Zwaan (Eds.), *Grounding cognition: The role of perception and action in memory, language, and thought*. New York: Cambridge University Press.

Berlin, B. and Kay, P. (1969). *Basic Color Terms: Their Universality and Evolution.* Berkeley, CA: University of California Press.

Bernard, C. (1858/2002) *Leçons sur la physiologie et la pathologie du système nerveux, 2 vols*. (Paris, 1858) 1: 3. Translated by Otis, L. (2002).

Black, M. (1962). *Models and Metaphors.* Ithaca, NY: Cornell University Press.

Bowdle, B.F., and Gentner, D. The Career of Metaphor. *Psychological Review.* In press.

Bowdle, B.F., and Gentner, D. (1999). Metaphor comprehension: From comparison to categorization. *Proceedings of the Twenty-first Annual Conference of the Cognitive Science Society,* 90-95.

Boyd, R.N. (1988). How to be a moral realist. In G. Sayre-McCord (Ed.), *Essays on Moral Realism* (pp. 181 – 228). Ithaca, NY: Cornell University Press.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (1999). *How People Learn: Brain, Mind,Experience, and School.* Washington DC: National Academy Press.

Brookes, D.T. (2004). Do we say what we mean? Misclassification of physics concepts and students' difficulties. 129th Meeting of the American Association of Physics Teachers. Sacramento, CA. *AAPT Announcer 33*(2).

Brookes, D.T. (2003). Linguistics and the epistemology of physics. 127th Meeting of the American Association of Physics Teachers: Madison, WI. *AAPT Announcer 32*(2).

Brown, R. (1958). *Words and Things.* New York, NY: Free Press.

Brown, J.S., Collins, A. and Duguid, P. (1989). Situated Cognition and the Culture of Learning. *Educational Researcher*; v18 n1, pp. 32-42.

Burr, Chandler. (2003). *The Emperor of Scent*. New York, NY: Random House.

Caramazza, A., McCloskey, M. and Green, B. (1981). Naive beliefs in sophisticated subjects: Misconceptions about trajectories of objects. *Cognition*, 9:117-123.

Carver, E.L., Price, K.L., and Wilken, D.M. (2000). *Increasing Student Ability To Transfer Knowledge through the Use of Multiple Intelligences.*

Chi, M.T.H. (1997). Creativity: Shifting across ontological categories flexibly. In Ward, T.B., Smith, S.M., and Vaid, J. (Eds.) *Creative Thought: An Investigation of Conceptual Structures and Processes*. Washington, DC: American Psychological Association. P 208-234

Chi M T H, Feltovich P J & Glaser R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science (5):*121-152.

Clement, J. (1993). Using bridging analogies and anchoring intuitions to deal with students' preconceptions in physics. *Journal of Research in Science Teaching*, 30(10), 1241-1257.

d'Andrade, R. (1995). *The development of cultural anthropology.* Cambridge, UK: Cambridge University Press.

Brown, David E. (1992). Using Examples and Analogies to Remediate Misconceptions in Physics: Factors Influencing Conceptual Change", Journal of Research in Science Teaching*, v29 n1*: 17-34.

Davidson, D. (1967). Causal relations. Journal of Philosophy, 64(21), 691–703.

diSessa, A. (1993). Towards an epistemology of physics. *Cognition and Instruction,* 10, 105-225

Doran, R.L. (1972). Misconceptions of selected science concepts held by elementary school students. *Journal of Research in Science Teaching*, 9:127-137.

Dubois-Reymond, E. (1868). On the time required for the transmission of volition and sensation through the nerves. In H.B. Jones (Ed.) *Croonian Lectures on Matter and Force*, London: Churchill.

Dunbar, K. (2001). The Analogical Paradox. In D. Gentner, K. Holyoak and B. Kokinov (Eds.), *The Analogical Mind: Perspectives from Cognitive Science* (pp. 313-334). Cambridge, MA: The MIT Press.

Dunbar, K. (2000). What scientific thinking reveals about the nature of cognition. In Crowley, K., Schunn, C.D., & Okada, T. (Eds.) *Designing for Science: Implications from Everyday, Classroom, and Professional Settings.* LEA. Hillsdale:NJ.

Edwards, B. (1989). *Drawing on the Right Side of the Brain: A Course in Enhancing Creativity and Artistic Confidence.* Los Angeles, CA: JP Tarcher.

Falkenhainer, B., Forbus, K., and Gentner, D. (1986). The structure-mapping engine: Algorithm and examples. *Artificial Intelligence, 41,* 1-63.

Fauconnier, G. and Turner, M. (1994). From the electronic text, http://markturner.org/csdl.rtf. From a handout at CSDL 1994, SanDiego, CA.
Fearing, F. An Examination of the Conceptions of Benjamin Whorf. In H Hoijer, (ed.) *Language in Culture: Conference on the Interrelations of Language and Other Aspects of Culture*. University of Chicago Press: Chicago, 1954.
Fellbaum, C. (1998). *WordNet: An electronic lexical database*. Cambridge, MA: MIT Press.
Fillmore, C. (1982). Towards a descriptive framework for spatial deixis. In R.J. Jarvella and W. Klein (eds.). *Speech, Place and Action: Studies in Deixis and Related Topics*. Chichester, England: Wiley.
Fromm, Erich. (1957). *The Forgotten Language; an Introduction to the Understanding of Dreams, Fairy Tales, and Myths.* New York, Grove Press.
Galison, P.L. (2003). *Einstein's Clocks, Poincare's Maps: Empires of Time*. New York: W.W. Norton and Co.
Gallas, K. (1995). Talking Their Way into Science: Hearing Children's Questions and Theories, Responding With Curricula. New York, NY: Teachers College Press.
Gallwey, W.T. (1997). *The Inner Game of Tennis*. New York: Random House.
Gaume, B., Duvignau, K., Gasquet, O., and Gineste, M. (2002). Forms of meaning, meanings of form. *Journal of Theoretical Artificial Intelligence 14*. pp 61-74.
Gentner, D. (1983). Structure-mapping: A theoretical framework for analogy. *Cognitive Science, 7*, 155-17.
Gentner, D. (1989). The mechanisms of analogical learning. In S. Vosniadu & A. Ortony (Eds.) *Similarity and Analogical Reasoning.* Cambridge, UK: Cambridge University Press.
Gentner, D. and Forbus, D.R. (1991). MAC/FAC: A model of similarity-based retrieval. *Proceedings of the Cognitive Science Society*.
Gentner, D., & Gentner, D. R. (1983). Flowing waters or teeming crowds: Mental models of electricity. In D. Gentner & A. L. Stevens (Eds.), *Mental models* (pp. 99-129). Hillsdale, NJ: Lawrence Erlbaum Associates.
Gentner, D., & Jeziorski, M. (1993). The shift from metaphor to analogy in western science. In A. Ortony (Ed.), *Metaphor and thought*. England: Cambridge University Press.
Gentner, D., Loewenstein, J., Thompson, L. (2003). Learning and Transfer: A general role for analogical encoding. *Journal of Educational Psychology, 95*(2), 393-408.
Gentner, D., & Markman, A. B. (1997). Structure mapping in analogy and similarity. *American Psychologist (52:1),* 45-56.
Gentner, D., Rattermann, M. J., and Forbus, K. D. (1993). The roles of similarity in transfer: Separating retrievability from inferential soundness. *Cognitive Psychology 25*:524-575.
Gibbs, R.W. (1992). Categorization and metaphor understanding. *Psychological Review 99:3*. 572-577.
Gibbs, R.W. and Matlock, T. (1999). Psycholinguistics and mental representations. *Cognitive Linugistics, 10(3)*, 263-269.
Gibson, J.J. (1979). The ecological approach to visual perception. Boston: Houghton Mifflin.

Gick, M.L., and Holyoak, K.J. (1983). Schema induction and analogical transfer. *Cognitive Psychology, 15*, 1-38.

Glucksberg, S., Manfredi, D.A., and McGlone, M.S. (1997). Metaphor comprehension: How metaphors create new categories. In Ward, T.B., Smith, S.M., and Vaid, J. (Eds.) *Creative Thought: An Investigation of Conceptual Structures and Processes*. Washington, DC: American Psychological Association. 327-350

Glucksberg, S., and Keysar, B., (1990). Understanding metaphorical comparisons: Beyond similarity. *Psychological Review, 97(1)*, 3-18.

Goodman, N. (1972). Seven strictures on similarity. In N. Goodman (ed.) *Problems and Projects*. Indianapolis: Bobbs-Merrill.

Greeno, J. G. (1998). The situativity of knowing, learning, and research. *American Psychologist, 53(1)*, 5-26.

Griffiths, Alan K.; Preston, Kirk R. (1992). Grade-12 Students' Misconceptions Relating to Fundamental Characteristics of Atoms and Molecules. *Journal of Research in Science Teaching, v29 n6*: 611-28.

Hage, P., and Miller, W.R. (1976). Eagle = bird: A note on the structure and evolution of Shoshoni. Ethnoornithological Nomenclature. *American Ethnologist* 3: 481-48

Hammer, D. (2004). The Variability of Student Reasoning, Lecture 3: Manifold Cognitive Resources. To be published *in The Proceedings of the Enrico Fermi Summer School in Physics, Course CLVI.* Italian Physical Society.

Hammer, D., Elby, A., Scherr, R.E., and Redish, E.F. (2004). Resources, Framing and Transfer. *Not for citation or distribution. Oops.*

Hesse, M.B. (1966) *Models and Analogies in Science*. Notre Dame, Indiana: University of Notre Dame Press.

Hobbes, T. (1651/1999). *Leviathan*. From the electronic text, http://darkwing.uoregon.edu/~rbear/hobbes/leviathan.html. Eugene, OR, The University of Oregon.

Hofstadter, D. (2004). http://www.cogs.indiana.edu/people/homepages/hofstadter.html

Hofstadter, D. (2003). *Analogy as the Central Motor of Discovery in Physics*. Presentation at The Ohio State University. Personal video-tape of the talk from the OSU Physics Department.

Hofstadter, D. (2001). Epilogue: Analogy as the core of cognition. In Gentner, D., Holyoak, K.J., and Kokinov, B.N. (Eds.) *The Analogical Mind*, p. 499-538. Cambridge, MA: The MIT Press.

Hofstadter, D., and the Fluid Analogies Research Group. (1995). *Fluid Concepts and Creative Analogies: Computer Models of the Fundamental Mechanisms of Thought.* New York, NY: Basic Books.

Hofstadter, D., and Mitchell, M. (1994). The CopyCat project: A model of mental fluidity and analogy-making. In K.J. Holyoak and J.A.Barnden (Eds.), *Advances in connectionist and nural computation theory,* vol. 2, *Analogical Connections* (p. 31-112). Norwood, NJ: Ablex.

Holyoak, K. (1985). The pragmatics of analogical transfer. In G. H. Bower (Ed.), *The psychology of learning and motivation* (Vol. 19, pp 59-87). New York: Academic Press.

Holyoak, K., Gentner, D., and Kokinov, B. (2001). Introduction: The place of analogy in cognition. In Gentner, D., Holyoak, K., and Kokinov, B. (Eds.) *The Analogical Mind.* Cambridge, MA: The MIT Press.

Holyoak, K.J. and Thagard, P. (1989). Analogical mapping by constraint satisfaction. *Cognitive Science 13,* 295-355.

Holyoak, K.J. and Thagard, P. (1989). A computational model of analogical problem solving. In S. Vosniadu & A. Ortony (Eds.) *Similarity and Analogical Reasoning.* Cambridge, UK: Cambridge University Press.

Johnson, M.G. and Magdaly, .G. (1979). Some cognitive aspects of figurative language: Association and metaphor. *Journal of Psycholinguistic Research 8,* pp 249-265.

Jung, C.G. (1969). *Man and His Symbols*. New York: Doubleday.

Karmiloff-Smith, A. (1992). *Beyond Modularity: A Developmental Perspective on Cognitive Science.* Cambridge, MA: The MIT Press.

Kepler, J. (1596). *Mysteriumcosmographicum.*

Keysar, B, and Glucksberg, S. (1992). Metaphor and communication. *Poetics Today 13:4*. 633-658.

Kittay, E.F. (1987). *Metaphor*. New York, NY: Oxford University Press.

Kittay, E.F. (1997). Of "men" and metaphors: Shakespeare, embodiment, and filing cabinets. In Ward, T.B., Smith, S.M., and Vaid, J. (Eds.) *Creative Thought: An Investigation of Conceptual Structures and Processes*. Washington, DC: American Psychological Association.

Kittler, F. (1990). *Discourse Networks.* Stanford, CA: Stanford University Press.

Koestler, A. (1964). *The act of creation.* New York: Dell.

Kolodner, J.L. (1993). *Case-Based Reasoning*. San Mateo, CA: Morgan Kaufman Publishers.

Kosterlitz,J.M. and Thouless,D.J.(1973). Ordering, metastability and phase transition in two-dimensional systems. *Journal of Physics C 6* p. 1181-1203.

Kuhn, T. (1970). *The Structure of Scientific Revolutions* (2nd ed.). Chicago: University of Chicago Press.

Lakoff, G. (1987). Women, Fire and Dangerous Things: What categories reveal about the mind. Chicago: The University of Chicago Press.

Lakoff, G and Johnson, M. (1980). Metaphors We Live By. Chicago: University of Chicago Press.

Lakoff, G, and Nunez, R. (2001). *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics Into Being.* New York: Basic Books.

Latour, B. (1993). We Have Never Been Modern. Cambridge, MA: Harvard University Press.

Lave, J. (1988). Cognition in Practice. Cambridge, UK: Cambridge University Press.

Lave, J. and Wenger, E. (1991). Situated Learning: Legitimate Peripheral Participation. Cambridge University Press.

Lemke, J.L. (1997). Cognition, context and learning: A social semiotic perspective. In D. Kirshner (Ed.) Situated cognition theory: Social, neurological, and semiotic perspectives. Hillsdale, NJ: Lawrence Erlbaum Associates.

Lenoir, T. (1993). The eye as mathematician: clinical practice, instrumentation and Helmholtz's construction of an empiricist theory of vision. In D. Cahan (Ed.)

Herman von Helmholtz and the Foundations of 19th Century Science. Berkeley, CA: University of California Pres.
Lewis, M. (2003). Moneyball: The Art of Winning an Unfair Game. New York: W.W. Landon and Company.
Locke, J. ([1686]1959). An essay concerning human understanding. A. C. Fraser (Ed.) New York: Dover.
Louca, L. (2004). Case studies of fifth-grade student modeling in science through programming: Comparison of modeling practices and conversations (Doctoral dissertation, University of Maryland, 2004). *Dissertation Abstracts International* (UMI No. 31231919).
Lulis, E., Evens, M., and Michael, J. (2004). How human tutors employ analogy to facilitate understanding. *2004 Meeting of the Cognitive Science Society*.
Markman, A. B., and Gentner, D. (1993). Structural alignment during similarity comparisons. *Cognitive Psychology 25*:431-467.
Maxwell, J. A. (2004). Causal explanation, qualitative research, and scientific inquiry in education. *Educational Researcher, 33*(2), 3-11.
May, D.B., Hammer, D., and Roy, P. (2004). Children's analogical reasoning in a 3rd grade science discussion. In press.
Medin, D.L, and Wattenmaker, W.D. (1987). Category cohesiveness, theories, and cognitive archeology. In U. Neisser (Ed.) *Concepts and Conceptual Development*. New York: Cambridge University Press.
Miller, G.A. (1979). Images and models, similes and metaphors. In A. Ortony (Ed.) *Metaphor and Thought (1st ed.)*. Cambridge: Cambridge University Press.
Mitchell, M. (1990). *Copycat: A computer model of high-level perception and conceptual slippage in analogy making*. PhD thesis, University of Michigan, Ann Arbor, Michigan.
Murphy, G.L. (2002). *The Big Book of Concepts*. Cambridge, MA: The MIT Press.
Murphy, G.L., and Medin, D.L. (1985). The role of theories in conceptual coherence. *Psychological Review, 92*, 289-316.
Namy, L.L., and Gentner, D. (1999). Comparison in the development of categories. *Cognitive Development, 14,* 487-513.
NASA: National Aeronautics and Space Administration. (1999). *A Teacher's Guide with Activities in Science, Mathematics, and Technology, Grades 5-12*. http://spacelink.nasa.gov/Instructional.Materials/Curriculum.Support/Physical.Science/Educator.Guides.and.Activities/Microgravity.Teacher.Guide/.index.html
NRC: National Research Council. (1998). *National Science Education Standards*. Washington, DC: National Academy Press.
NRC: National Research Council. (2002). *Scientific Research in Education.* 2002 Committee on Scientific Principles for Education Research Richard J. Shavelson and Lisa Towne, Editors. Washington, DC: National Academy Press.
Neisser, U. (1987). Introduction: The ecological and intellectual bases of categorization. In U. Neisser (Ed.), *Concepts and conceptual development*. New York, NY: Cambridge University Press.

Nersessian, N. J. (1985). Faraday's field concept. In Gooding, D. & James, F. A. J. L (eds.) *Faraday Rediscovered: Essays on the Life and Work of Michael Faraday, 1791-1867*. Macmillan Press, Basingstoke, England. 377--406.

Nersessian, N. J. (2002). Maxwell and "the Method of Physical Analogy": Model-based reasoning, generic abstraction, and conceptual change. In: *Essays in the History and Philosophy of Science and Mathematics*, D. Malament, ed. 129--166. Lasalle, Il: Open Court

Newport, E.L., and Bellugi, U. (1978). Linguistic expression of category levels in a visual-gestural language: A flower is a flower is a flower. In *Cognition and Categorization*, E. Rosch and BB Lloyd (eds.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Nietzsche, F. (1873/1977). On Truth and Lie in an Extra-Moral Sense. In W. Kaufman (Ed.) *The Portable Nietzsche*. New York: Viking Portable Library.

Novick, L.R. (1988). Analogical transfer, problem similarity, and expertise. *Journal of Experimental Psychology: Learning, Memory and Cognition, 14*, 510-520.

Ortony, A. (1993). *Metaphor and Thought*. New York, NY: Cambridge University Press.

Palmer, G.B. (1996). *Toward a Theory of Cultural Linguistics*. Austin, TX: The University of Texas Press.

Pittman, K.M. (1999). Student-generated analogies: Another way of knowing? *Journal of Research in Science Teaching, 36(1)*, 1-22.

Postman, N. (1992). Conscientious Objections: Stirring Up Trouble About Language, Technology and Education. New York, NY: Vintage Books.

Redish, E.F. (J.) (2003). A theoretical framework for physics education research: modeling student thinking. International school of physics “enrico fermi”course clvi varenna, ital july 15-25 2003

Richards, I. (1936) *The Philosophy of Rhetoric*. New York: Oxford University Press.

Richland, L.E., Holyoak, K.J., and Stigler, J.W. (2004). Analogy use in eighth-grade mathematics classrooms. *Cognition and Instruction, 22(1)*, 37 – 60.

Rips, L.J. (1975). Inductive judgments about natural categories. *Journal of Verbal Learning and Verbal Behavior, 14,* 665-685.

Rosch, E. (Heider). (1973). Natural categories. *Cognitive Psychology, 4,* 328-350.

Rosch, E.H. (1978). Principles of categorization. In E. Rosch and B. Lloyd, eds. *Cognition and Categorization.* Hillsdale, N.J.: Lawrence Erlbaum Associates. 27-48.

Rosch, E., Mervis, C.B., Gray, W.Y., Johnson, D.M. and Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology (8)* 382-439.

Ross, A. (2004). Bjork’s Saga. *The New Yorker*. August 8, 2004.

DE Rumelhart, “Schemata: The building blocks of cognition,” In JT Gurthrie (Ed.), *Comprehension and Teaching: Research reviews.* International reading association, Inc. 3-27 (1981).

Scharmer, C.O. (1999). Primary knowing: When perception happens from the whole field, interview with Professor Eleanor Rosch. *Dialog on Leadership* [Online interviews]. Retrieved March 13, 2004, from the world wide web site http://www.dialogonleadership.org/interviewRosch.html

Scott, C. & Schactman, M. (2004). *Patient Family Guide Heart Surgery*. From the online text: http://www.lij.edu/lijh/cardiothoracic_surgery/heart_surgery.html.
Shapin, S. & Shaffer, S. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton, NJ: Princeton University Press.
Shen, Y. (1992). Metaphor and categories. *Poetics Today*, 13(4), 771-794.
Shen, Y. (1999). Principles of metaphor interpretation and the notion of "domain": A proposal for a hybrid model. *Journal of Pragmatics 31*: 1631–1653
Sloep, P.B. (1997). The Metaphorical Transfer of Models published as part of the chapter "The Whys and Hows of Interdisciplinarity." In P. Weingart et al. (eds) *Human by Nature; Between Biology and the Social Sciences*. Lawrence Erlbaum, Mahwah NJ, London, pp 103-150.
Taber, K.S. (2000). Multiple frameworks?: Evidence of manifold conceptions in individual cognitive structure. *International Journal of Science Education, 22(4)* 399-417.
Thayer, E.L and Polacco, P. (1997) Casey at the Bat: A ballad of the republic, sung in the year 1888. New York: Putnam Publishing Group.
Trager, G.L. (1936). "Cottonwood" = "Tree:" A southwestern linguistic trait. *International Journal of American Linguistics, 9,* 177-188.
Tyson, L. (1999). *Critical Theory Today: A User-Friendly Guide*. New York and London: Garland Publishing Inc.
Tversky, A. (1977). Features of similarity. *Psychological Review, 84*, 327-352.
VanLehn, K. (1998). Analogy events: How examples are used during problem solving. *Cognitive Science, 22(3)*, 347-388.
Vosniadu, S. and Ortony, A. (1989). Similary and analogical reasoning: A synthesis. In S. Vosniadu & A. Ortony (Eds.) *Similarity and Analogical Reasoning.* Cambridge, UK: Cambridge University Press.
Zadeh, L. (1965). Fuzzy sets. *Information and Control, 8*, 338-353.