JERRY R. HOBBS

Personal:

Address: USC Information Sciences Institute
4676 Admiralty Way
Marina del Rey, California 90292

Telephone: office: (310) 448-9140
fax: (310) 822-0751
home: (310) 577-7991

E-Mail: hobbs@isi.edu

Web Page: http://www.isi.edu/∼hobbs/

Citizenship: USA

Education:

New York University, Ph.D., Computer Science, 1974
Thesis Advisors: J.T. Schwartz, Naomi Sager
New York University, M.S., Computer Science, 1970
Duke University, B.S., Mathematics, 1964

Honors:

Awarded Doctor of Philosopy honoris causa, University of Uppsala, Sweden,
January 2003.
ISI Fellow, March 2004
Elected Fellow, American Association for Artificial Intelligence, 1992

Professional Experience:

Director of the Natural Language Group, Information Sciences Institute, University of Southern California, 2012-present
Senior Computer Scientist and Senior Project Leader, Information Sciences Institute, University of Southern California, 2002-present
Research Professor, Department of Computer Science, University of Southern California, 2003-present
Principal Scientist, SRI International, 1994-2002
Program Director, Natural Language Program, Artificial Intelligence Center, SRI International, 1992-2001

Senior Computer Scientist, SRI International, 1981-1992

Computer Scientist, SRI International, 1977-1981

Consulting Professor, Department of Linguistics, Stanford University, 1992-2002

Consulting Professor, Symbolic Systems Program, Stanford University, 1994-2002

Associate, Center for the Study of Language and Information (CSLI), Stanford University, 1983-2002

Assistant Professor, Dept. of Computer Sciences, City College, City University of New York, 1974-1977

Instructor, Dept. of Computer Science, Yale University, 1972-1974

Managerial Experience:

Director of the Natural Language Group, Information Sciences Institute, University of Southern California, 2012-present

Program Director of the Natural Language Group, Artificial Intelligence Center, SRI International for over eight years.

Managed approximately fifteen people, including ten Ph.D.'s, four fellows of the American Association for Artificial Intelligence, and three past presidents of the Association of Computational Linguistics, doing research in information extraction, text understanding, spoken language systems, language-centered human-computer interfaces, and machine translation.

Maintained an 80% to 100% level of funding through most of my tenure.

Prepared and directed the preparation of proposals, and marketed to American and Japanese commercial clients and American government clients, including DARPA, National Science Foundation, and the intelligence agencies.

Recruited top young talent to maintain the cutting edge quality of our research and the high reputation of our group.

Research Grants:

Principal investigator or co-principal investigator for 33 projects totaling over $38,000,000.

Principal Investigator, Metaphor Interpretation for Conceptual Schemas, IARPA contract, $12,500,000, 2012-2016.

Co-Principal Investigator (with Nick Cassamatis), Unified Theories of Language and Cognition, ONR MURI program contract, $500,000, 2009-2014.

Co-Principal Investigator (with Alicia Sagae), Commonsense Sociocultural Models for Culture Training in Serious Games, ONR HSCB program contract, $270,000, 2009-2012.

Co-Principal Investigator (with David Ferucci and Eduard Hovy), Reader and Contextual Reasoner, DARPA MRP program contract, $2,500,000, 2009-2014.

Co-Principal Investigator (with Pedro Domingos), Reasoning by Abductive Inference, ARO MURI program contract, $170,000, 2008-2010.

Co-Principal Investigator (with James Pustejovsky), Extracting and Reasoning about Time, DTO Contract, $340,000, 2006-2008.

Co-Principal Investigator (with Peter Clark and Christiane Fellbaum), From WordNet to a Knowledge Base, DTO Contract, $340,000, 2006-2008.

Principal Investigator, Survey of Geospatial Ontologies, DARPA Contract, $100,000, 2006.

Co-Principal Investigator (with James Pustejovsky and Inderjeet Mani), Representing and Reasoning about Time in Text, ARDA Contract, $296,000, 2004-2006.

Co-Principal Investigator (with George Miller), Extending WordNet, ARDA Contract, $449,000, 2004-2006.

Co-Principal Investigator (with Ram Nevatia), Modeling Video Event Recognition (MOVER), ARDA Contract, $240,000, 2003-2006.

Principal Investigator, From Question-Answering to Information-Seeking Dialogs, ARDA Contract, $900,000/year, 2001-2003.

Principal Investigator, Knowledge Creation Tools for DAML, DARPA Contract, $860,000/year, 2000-2005.

Co-Principal Investigator (with Douglas Appelt), ACE Pilot Study, Office of Advanced Analytic Tools, Central Intelligence Agency, $194,000, 1999-2000.

Principal Investigator, Open Doman Information Extraction, Office of Advanced Analytic Tools, Central Intelligence Agency, $300,000, 1999-2000.

Co-Principal Investigator (with Douglas Appelt), Tipster III: Breaking the Information Extraction Barrier, DARPA Contract, $300,000/year, 1997-2000.

Co-Principal Investigator (with Andrew Kehler), Multimodal Access to Spatial Data, NSF/DARPA Grant (Stimulate Program), $300,000/year, 1997-2000.

Co-Principal Investigator (with Andreas Stolcke), Speech and Language Technology for Information Access and Processing, DARPA Contract, $580,000/year, 1997-2000.

Principal Investigator, Integrated Document Detection and Information Extraction for Tipster, ARPA Contract, $480,000/year, 1994-1997.

Principal Investigator, Research on Text Understanding, ARPA Contract, $540,000 / year, 1994-1998.

Co-Principal Investigator (with Richmond Thomason of University of Pittsburgh), Integrated Abductive Model of Interpretation and Generation, NSF / ARPA Grant, $285,000/year, 1994-1998.

Principal Investigator, Analyzing Trouble-Shooting Queries, Center for the Study of Language and Information Grant, $25,000, 1994-1995.

Co-Principal Investigator (with Mabry Tyson), Warbreaker Message Handler, ARPA Contract, $800,000/year, 1993-1999.

Principal Investigator, Data Documentation Analysis Tool, Hughes Communications and Data Systems Division, Hughes Aircraft Corp., $75,000, January-November 1994.

Principal Investigator, Value-Added Name Finder, Dialog Corp., $99,000, September 1993 - August 1994.

Principal Investigator, Data Access for Situation Handling, Office of Research and Development, Central Intelligence Agency, $250,000, July 1993 - March 1995.

Principal Investigator, Message Understanding Conference-5, ARPA Grant, $40,000, January - September 1993.

Principal Investigator, Research in Text Processing: The TACITUS System, DARPA Grant, $1,000,000, 1990-1992.

Principal Investigator, Text Understanding for Strategic Computing, DARPA Grant, $2,800,000, 1985-1990.

Co-Investigator (Ray Perrault, principal investigator), Computer Dialogue Laboratory, NTT-Data Communications Systems Corp. Grant, $500,000, 1990-1991.

Co-Principal Investigator (with Donald Walker), Natural Language Access to Medical Text, Joint National Library of Medicine and National Science Foundation Grant, $1,000,000, 1980-1985.

Co-Principal Investigator (with Jane Robinson), Analysis of English Used in Computer Manuals, Hitachi Corp. Grant, $40,000, 1982.

Principal Investigator, Interpreting Natural Language Discourse, National Science Foundation Grant, $50,000, 1978-1980.

City University of New York Faculty Research Award Program Grants, 1975-1977.

Other Professional Activities:

President, Association for Computational Linguistics, 1990. (Instituted ACL special interest groups and student session at annual meeting.)
> Vice-President, 1989.
> Program Chairman for Annual Meeting, 1988.
> Nominating Committee, 1991-1993.
> Executive Committee, 1976-1979.
> Member, 1975-present.

Fellow, American Association for Artificial Intelligence, 1992-present
> Member, 1980-present.

General Editor, "Advances in Artificial Intelligence" Series, Ablex Publishing Company, 1982-1987.

Organization and management of Commonsense Summer, a large project aimed at encoding commonsense knowledge for AI applications (sponsored by CSLI), 1984.

Organized Congressional lobbying effort also involving Edward Feigenbaum, Nils Nilsson, Donald Nielson, and J. Martin Tennenbaum.

Editorial Boards:
> *Discourse Processes*, 1982-present.
> *Journal of Semantics*, 1987-1993.
> *American Journal of Computational Linguistics*, 1979-1982.

Consultation Board, International Pragmatics Association, 1986-1999.

Review Panel, National Science Foundation, January 1997, March 2004.

Membership in Other Professional Societies:
> Linguistic Society of America, 1977-present
> Special Interest Group for Artifical Intelligence (SIGART), 1975-1995
> Cognitive Science Society, 1980-1987, 1997
> American Association for the Advancement of Science, 1989-1990

Reviewer for numerous journals, conferences, and funding organizations.

Teaching Experience:

Graduate Classes at the University of Southern California for Computer Science Department:

- Computational Linguistics, spring semesters, 2004, 2005, 2007, 2008, 2009, 2010, 2011 (co-taught with Ed Hovy, Daniel Marcu, David Chiang, Patrick Pantel, and Zornitsa Kozareva).
- Lexical Semantics, fall semester, 2005 (co-taught with Ed Hovy, Patrick Pantel, and Robin Belvin).

Graduate Seminars at Stanford University for Linguistics and Computer Science Departments:

- Abductive Methods in Discourse Interpretation, winter quarter 1992.
- The Resolution Problem in Natural Language, fall quarter 1988 (co-taught with Ivan Sag, Herbert Clark, and David Rumelhart).
- Discourse Processing, spring quarter 1987 (co-taught with Douglas Appelt and Martha Pollack).
- Discourse Analysis, spring quarter 1982 (co-taught with Geoffrey Nunberg).

Courses Taught at Linguistic Society of America Summer Institutes:

- Deep Lexical Semantics, July 2005, Massachusetts Institute of Technology.

- Abductive Methods of Discourse Interpretation, July 1991, University of California at Santa Cruz.
- Commonsense Knowledge and Lexical Semantics, July-August 1987, Stanford University (co-taught with William Croft).

Tutorials and Lecture Series:

- Lecture Series on Natural Language and the Semantic Web, Eurolan Summer School, Bucharest, Romania, July 2003.
- Lecture Series on Natural Language Understanding, Eurolan Summer School, University A. I. Cuza, Iasi, Romania, July 1999
- Lecture Series on Natural Language Understanding, Department of Linguistics, University of Uppsala, Uppsala, Sweden, May 1998
- Information Extraction, ROCLing, Tsungwen Reservoir, Taiwan, August 1996
- Text Understanding, First International Conference on Information Knowledge Management, Baltimore, Maryland, November 1992 (co-taught with Lisa Rau).
- Message Processing, AAAI-92, San Jose, California, July 1992 (co-taught with Lisa Rau).
- Advanced Computational Linguistics, National Centre for Software Technology, Bombay, India (sponsored by United Nations Development Programme), December 1991 (co-taught with Martin Kay).
- Message Processing, IJCAI-91, Sydney, Australia, August 1991 (co-taught with Lisa Rau).
- Natural Language Dialogue: Beyond Question Answering, AAAI-87, Seattle, Washington, July 1987 (co-taught with Philip Cohen).
- Discourse Processing, COLING-86, Bonn, West Germany, August 1986.
- Techniques in Database Interfaces and Natural Language, Seminar sponsored by Agence de l'Informatique, Clermont l'Herault, France, September 1982 (co-taught with Robert Moore, Jane Robinson, and Stan Rosenschein).
- Natural Language Processing, Scandinavian Summer School for Computational Linguistics, Reykjavik, Iceland, June 1981 (co-taught with Maurice Gross).

Assistant Professor, Department of Computer Sciences, City College, City University of New York, 1974-1977: taught courses in artificial intelligence, computational linguistics, formal language theory, compilers, data structures, programming languages, program schemata, finite mathematics, and linear algebra.

Instructor, Department of Computer Science, Yale University, 1972-1974: taught courses in formal language theory, computational complexity, information retrieval, data structures.

Instructor, Department of Mathematics, New York University, 1971-1972: taught courses in calculus and the history of mathematics.

Student Advising:

At the University of Southern California I have advised the following graduate students: Feng Pan, Nishit Rathod, Rutu Mulkar, Fahad al-Qahtani, Nicholas White, Niloofar Montazeri, and Dirk Hovy. In addition, I have been on the thesis committees for Wenji Mao, Soo-Min Kim, Liang Zhou, Namhee Kwan, Donghui Feng, Antonio Roque, Phillip Potamides, Rahul Bhagat, Jinyong Lee, and Stephen Tratz.

At SRI I did not have a full-time faculty position, so I could not be the official supervisor of any students. But I have supervised some of the research activities of, among others, the following students, the first three during Commonsense Summer, 1984:

Henry Kautz, winner of the Computers and Thought Award, 1989, and now professor and chairman in the Department of Computer Science, University of Rochestor.

Yoav Shoham, now a professor in the Dept. of Computer Science, Stanford University.

William Croft, now a professor in the Dept. of Linguistics, University of New Mexico, and author of several well-known books in language typology.

David Evans, formerly an associate professor in the Dept. of Philosophy, Carnegie-Mellon University, and now CEO of Clairvoyance Corporation.

Barney Pell, who was president and CEO of PowerSet.

Robin Valenza, graduate student in the Department of English, Stanford University.

Rebecca Scarborough, later a lecturer in the Department of Linguistics, Stanford University.

Lauren Aaronson, graduate student in the Department of Philosophy, Stanford University.

I was also an external member of the dissertation committee for Robin Cohen, now a professor in the Dept. of Computer Science, University of Waterloo. I have also been on the dissertation committee for Heather Stark, Department of Psychology, Stanford University; Manny Rayner, Department of Computer Science, University of Stockholm; David Magerman, Department of Computer Science, Stanford University; and Marie-Francine Moens, Katholieke Universiteit Leuven, Belgium; and Ekaterina Ovchinnikova, University of Osnabrück.

Major System Building Efforts Directed:

For each of these systems, I was responsible for the overall design, developed the key ideas, wrote much of the code, and managed others in the development of the system.

NL Pipeline and MiniTacitus, a system for translating texts into logical form and performing abductive inference to interpret them; used on the DARPA seedlings that sold the Machine Reading Program to DARPA, 2004-present.

OWL-Time, an ontology for expressing temporal information for the Semantic Web, 2002-present.

DAML-Services (now OWL-S), an ontology for characterizing the capabilities of Web services for the Semantic Web, 2001-2004. (I helped initiate and lead this collaborative effort among researchers at Stanford, Carnegie-Mellon, Bolt Beranek and Newman, Yale, and Nokia.)

FASTUS, a system for very fast extraction of information from natural language texts for entry into databases, 1992-present. (This system performed very well in the MUC-4, MUC-5, and MUC-6 message processing systems evaluations and convinced many in government and in the commercial world for the first time of the viability of natural language processing. It was the basis of the Warbreaker Message Handler System and is the basis for the start-up Discern Communications. It was the first use in information extraction, of a technology, cascaded finite-state transducers, that has since become standard in information extraction.)

TACITUS-Lite, a simple and transparent abductive theorem-prover, for wide distribution, 1992-present.

TACITUS, a system for text understanding using commonsense knowledge of the world, 1985-1992. (This system was evaluated in and did well in the MUC-2 and MUC-3 message processing system evaluations.)

DIALOGIC, among the largest computer grammars of English that have been constructed, developed principally in 1980-1 but continuing to 1992. Used in TACITUS. Achieved the highest score in grammar evaluation, September 1992.

Research Interests and Expertise:

How is knowledge used in the interpretation of discourse?

Efficient methods for extraction of information from texts.
Knowledge representation and the logical form of English sentences.
Syntactic analysis and compositional semantics.
Encoding commonsense knowledge, especially in time, space, causality, and cognition.
Ontologies for the Semantic Web.
Abductive inference.
"Local pragmatics" problems, such as reference resolution, ambiguity resolution, and metaphor and metonymy interpretation.
The structure of discourse.

The structure of two- and three-person conversation.
Efficient methods for machine translation.
Artificial intelligence models in anthropology and literary criticism.

Patents:

Patent US6601026, D.E. Appelt, J. F. Arnold, J. S. Bear, J. R. Hobbs, D. J. Israel, M. Kameyama, D. L. Martin, K. L. Myers, G. Ravichandran, M. E. Stickel, W. M. Tyson. "Information retrieval by natural language querying". Filed 1999-09-17. Issued 2003-07-23.

Patents Pending:

"System, Method, and Article of Manufacture for Concept Based Information Searching", Filed July 10, 2000, Serial Number 09/613,235, Inventors: James F. Arnold, David J. Israel, W. Mabry Tyson, John S. Bear, Jerry R. Hobbs, Loren L. Voss, Douglas Appelt, Mark Stickel.

Principal Publications:

Principal Refereed Journal Articles:

"Annotating and Learning Event Durations in Text" (with Feng Pan and Rutu Mulkar-MEhta), *Computational LInguistics*, Vol. 37, No. 4, 2011. .

"VERL: An Ontology Framework for Representing and Annotating Video Events" (with Francois R.J. Alexandre, Ram Nevatia, and Robert C. Bolles, 2005. IEEE Multimedia, Volume 12, October-December 2005, pp. 76-86.

"Toward a Useful Notion of Causality for Lexical Semantics", *Journal of Semantics*, Vol. 22, pp. 181-209, 2005.

"Formalizations of Commonsense Psychology" (with Andrew S. Gordon), *AI Magazine*, Winter 2004, pp. 49-62.

"An Ontology of Time for the Semantic Web", (With Feng Pan), *ACM Transactions on Asian Language Information Processing*, Vol. 3, No. 1, March 2004, pp. 66-85.

"Interpretation as Abduction", (with Mark Stickel, Douglas Appelt, and Paul Martin), *Artificial Intelligence*, Vol. 63, Nos. 1-2, pp. 69-142, October 1993.

"Sketch of an Ontology Underlying the Way We Talk about the World", *International Journal of Human-Machine Sutdies*, Vol. 43, 1995, pp. 819-830.

"Two Principles of Parse Preference", (with John Bear), in *Linguistica Computazionale: Current Issues in Computational Linguistics: In Honour of Don Walker*, Vol. 9-10, 1995, pp. 503-512.

"Against Confusion", *Diacritics*, pp. 78-92, December 1988.

"Commonsense Metaphysics and Lexical Semantics", (with William Croft, Todd Davies, Douglas Edwards, and Kenneth Laws). *Computational Linguistics*, Vol. 13, Nos. 3-4, pp. 241-250, July-December 1987.

"An Algorithm for Quantifier Scope Generation", (with Stuart Shieber), *Computational Linguistics*, Vol. 13, Nos. 1-2, pp. 47-63, January-June 1987.

"Overview of the TACITUS Project", *Computational Linguistics*, Vol. 12, No. 3, September, 1986.

"The Coherence of Incoherent Discourse", (with Michael Agar), *Journal of Language and Social Psychology*, Vol. 4, Nos. 3-4, 1985.

"Perche il Discorso E Coerente?" (Graziella Tonfoni, trans.) *Quaderni di Ricerca Linguistica*, pp. 5-53, 1984.

"Natural Plans", (with Michael Agar), *Ethos*, Vol. 11, pp. 33-48, 1983.

"Metaphor Interpretation as Selective Inferencing: Cognitive Processes in Understanding Metaphor", *Empirical Studies in the Arts*, Vol. 1, No. 1, pp. 17-34, and Vol. 1, No. 2, pp. 125-142, 1983.

"Review of Robert de Beaugrande's *Text, Discourse, and Process: Toward a Multidisciplinary Science of Texts*", *Language and Society*, Vol. 11, pp. 291-297, 1982.

"Interpreting Discourse: Coherence and the Analysis of Ethnographic Interviews", (with Michael Agar), *Discourse Processes*, Vol. 5, No. 1, pp. 1-32. January 1982.

"Conversation as Planned Behavior", (with David A. Evans), *Cognitive Science*, Vol. 4, no. 4, pp. 349-377, 1980.

"Why Ask?", (with Jane Robinson), *Discourse Processes*, Vol. 2, no. 4, pp. 311-318, October - December 1979.

"Coherence and Coreference", *Cognitive Science*, Vol. 3, No. 1, pp. 67-90, 1979.

"Resolving Pronoun References", *Lingua*, Vol. 44, pp. 311-338, 1978. Also in *Readings in Natural Language Processing*, B. Grosz, K. Sparck-Jones, and B. Webber, editors, pp. 339-352, Morgan Kaufmann Publishers, Los Altos, California.

"Making Computational Sense of Montague's Intensional Logic", (with Stan Rosenschein), *Artificial Intelligence*, Vol. 9, pp. 287-306, 1978.

"The Automatic Transformational Analysis of English Sentences: An Implementation", (with Ralph Grishman), *International Journal of Computer Mathematics*, Vol. 5, pp. 267-283, 1976.

Commentaries in Refereed Journals:

"Matter, Levels, and Consciousness", commentary on John Searle's "Consciousness, Explanatory Inversion, and Cognitive Science", *Behavioral and Brain Sciences*, Vol. 13, No. 4, pp. 610-611, December 1990.

"Are Explanatory Coherence and a Connectionist Model Necessary?", commentary on Paul Thagard's "Explanatory Coherence", *Behavioral and Brain Sciences*, Vol. 12, No. 3, pp. 476-477, September 1989.

Book:

Literature and Cognition, CSLI Lecture Notes Series, Stanford University, 1990.

Book Edited:

Formal Theories of the Commonsense World, (edited with Robert Moore), Ablex Publishing Corp., Norwood, New Jersey, 1985.

Principal Chapters in Books:

"The Deep Lexical Semantics of Event Words" (with Niloofar Montazeri), to appear in Ranier Osswald (ed.), *Concept Types and Frames.*

"'the', 'a', and ''", to appear in Valia Kordoni and Martin Kay (eds.), *Festschrift for Hans Uszkoreit.*

"Word Meaning and World Knowledge", to appear in C. Maienborn, K. von Heusinger, P. Portner, and N. van Leusen (eds.), *Handbook of Semantics*, chapter VI, article 33, Mouton de Gruyter.

"Toward a Formal Theory of Information Structure" (with Rutu Mulkar-Mehta), to appear in Stefan Artmann (ed.), *Evolution of Semantic Systems*, Springer.

"Questions in Decision-Making Dialogues", to appear in Jan-Peter de Ruiter (ed.), *Questions: Formal, Functional and Interactional Perspectives*, Cambridge University Press Series on Language, Culture, and Cognition.

"Anthropomorphic Self-Models for Metareasoning Agents" (with Andrew S. Gordon and Michael T. Cox), Michael T. Cox and Anita Raja (eds.), *Metareasoning: Thinking about Thinking*, MIT PRess, 2011.

"Clause-Internal Coherence", in Peter Kuhnlein, Anton Benz, and Candace L. Sidner (eds.), *Constraints in Discourse 2*, John Benjamins Publishing Company, Amsterdam, 2010, pp. 15-34.

"Information Extraction" (with Ellen Riloff), in N. Indurkhya and F. Damerau (eds.), *Handbook of Natural Language Processing*, CRC Press, New York, 2010, pp. 511-532.

"The Origin and Evolution of Language: A Plausible, Strong AI Account", in Michael Arbib, editor, *Action to Language via the Mirror Neuron System*, Cambridge University Press, 2005.

"Deductive Question Answering from Multiple Resources" (with Richard Waldinger, Douglas E. Appelt, Jennifer L. Dungan, John Fry, Jerry Hobbs, David J. Israel, Peter Jarvis, David Martin, Susanne Riehemann, Mark E. Stickel, and Mabry Tyson), in M. Maybury (Ed.), *New Directions in Question Answering*, AAAI Press/MIT Press, pp. 253-262, 2004.

"Modélisation du discours: visées et structures du discours", to appear in F. Corblin and C. Gardent (Eds.), *Interpréter en contexte*, Hermes Science Publishing Ltd., Paris, trans. by Colette Corblin, pp. 211-244, 2005.

"Abduction in Natural Language Understanding", in L. Horn and G. Ward (eds.), *Handbook of Pragmatics*, Blackwell, 2003.

"Spatial Representation and Reasoning" (with Srini Narayanan), in L. Nadel (Ed.) *Encyclopedia of Cognitive Science*, Nature Publishing Group, London, United Kingdom, 2003.

"Syntax and Metonymy", in P. Bouillon and F. Busa (Eds.), *The Language of Word Meaning*, pp. 290-311, Cambridge University Press, Cambridge, United Kingdom, 2001.

"FASTUS: A Cascaded Finite-State Transducer for Extracting Information from Natural-Language Text" (with Douglas E. Appelt, John Bear, David Israel, Megumi Kameyama, Mark Stickel, and Mabry Tyson), in E. Roche and Y. Schabes, eds., *Finite State Devices for Natural Language Processing*, MIT Press, Cambridge, Massachusetts, 1996.

"On the Relation Between the Informational and Intentional Perspectives on Discourse", in *Computational and Conversational Discourse: Burning Issues— An Interdisciplinary Account*, NATO ASI Series, Series F: Computer and Systems Sciences, Vol. 151, E. Hovy and D. Scott, editors, Springer, Berlin, Germany, pp. 139-157, 1996.

"Monotone Decreasing Quantifiers in a Scope-Free Logical Form", in K. van Deemter and S. Peters (Eds.), *Semantic Ambiguity and Underspecification*, CSLI Lecture Notes No. 55, pp. 55-76, Stanford, California, 1995.

"Robust Processing of Real-World Texts", (with Douglas Appelt, John Bear, Mabry Tyson, and David Magerman), in *Text-Based Intelligent Systems*, P. Jacobs, editor, Lawrence Erlbaum Associates, Inc., Hillsdale, New Jersey, pp. 13-34, 1992.

"Metaphor and Abduction", in A. Ortony, J. Slack, and O. Stock, eds., *Communication from an Artificial Intelligence Perspective: Theoretical and Applied Issues*, Springer-Verlag, Berlin, pp. 35-58, 1992.

"Topic Drift", in *Development of Conversational Coherence*, Bruce Dorval, editor, Ablex Publishing Corp., Norwood, New Jersey, 1990.

"Artificial Intelligence and Collective Intentionality (A Reply to John Searle)", in *Intentions in Communication*, P. Cohen, J. Morgan, and M. Pollack, editors, Bradford Books (MIT Press), Cambridge, Massachusetts, 1990.

"The Pierrehumbert-Hirschberg Theory of Intonational Meaning Made Simple", in *Intentions in Communication*, P. Cohen, J. Morgan, and M. Pollack, editors, Bradford Books (MIT Press), Cambridge, Massachusetts, 1990.

"Granularity", in *Readings in Qualitative Physics*, Daniel Weld, editor, Morgan Kaufmann Publishers, Los Altos, California, 1989, pp. 542-545.

"Sublanguage and Knowledge", in *Analyzing Language in Restricted Domains: Sublanguage Description and Processing*, Ralph Grishman and Richard Kittredge, editors, Lawrence Erlbaum Associates, Inc., Hillsdale, New Jersey, 1986.

"How to Grow Schemata out of Interviews", in *Directions in Cognitive Anthropology*, Janet W. D. Dougherty, editor, University of Illinois Press, Urbana, Illinois, 1985.

"Why is Discourse Coherent?", in *Coherence in Natural-Language Texts*, Fritz Neubauer, editor, Helmut Buske Verlag, Hamburg, West Germany, pp. 29-69, 1983.

"Toward an Understanding of Coherence in Discourse", in *Strategies for Natural Language Processing*, Wendy Lehnert and Martin Ringle, editors, Lawrence Erlbaum Associates, Inc., Hillsdale, New Jersey, pp. 223-244, 1982.

Principal Papers In Conference Proceedings:

"Toward a Commonsense Theory of Microsociology: Interpersonal Relationships", (with Alicia Sagae and Suzanne Wertheim), in M. Donnelly and G. Guizzardi (eds.), Formal Ontology in Information Systems: Proceedings of the Seventh International Conference (FOIS 2012), IOS Press, Amsterdam, Netherlands, pp. 249-262, 2012.

"Axiomatizing Change-of-State Words", (with Niloofar Montazeri), in M. Donnelly and G. Guizzardi (eds.), Formal Ontology in Information Systems: Proceedings of the Seventh International Conference (FOIS 2012), IOS Press, Amsterdam, Netherlands, pp. 221-234, 2012.

"A Commonsense Theory of Microsociology: Interpersonal Relationships" (with Alicia Sagae), *Proceedings* 10th Symposium on Logical Formalizations of Commonsense Reasoning, AAAI Spring Symposium Series, 2010.

"A Commonsense Theory of Mind-Body Interaction" (with Andrew S. Gordon), *Proceedings* 10th Symposium on Logical Formalizations of Commonsense Reasoning, AAAI Spring Symposium Series, 2010.

"Applications and Discovery of Granularity Structures in Natural Language Discourse" (with Rutu Mulkar-Mehta and Eduard Hovy), *Proceedings* 10th Symposium on Logical Formalizations of Commonsense Reasoning, AAAI Spring Symposium Series.

"Implementing Weighted Abduction in Markov Logic" (with James Blythe, Pedro Domingos, Rohit Kate, and Raymond Mooney), in J. Bos and S. Pulman (eds.), *Proceedings* Ninth International Conference on Computational Semantics (IWCS 2011), January 2011, pp. 55-64.

"Abductive Reasoning with a Large Knowledge Base for Discourse Processing", (with Ekaterina Ovchinnikova, Niloofar Montazeri, Theodore Alexandrov, Michael C. McCord, and Rutu Mulkar-Mehta), in J. Bos and S. Pulman (eds.), Proceedings, Ninth International Conference on Computational Semantics (IWCS 2011), January 2011, pp. 225-234.

"Elaborating a Knowledge Base for Deep Lexical Semantics" (with Niloofar Montazeri), in J. Bos and S. Pulman (eds.), Proceedings, Ninth International Conference on Computational Semantics (IWCS 2011), January 2011, pp. 195-204.

"Granularity in Natural Language Discourse" (with Rutu Mulkar-Mehta and Eduard Hovy), in J. Bos and S. Pulman (eds.), Proceedings, Ninth International Conference on Computational Semantics (IWCS 2011), January 2011, pp. 360-364.

"Goals in a Formal Theory of Commonsense Psychology" (with Andrew Gordon), *Proceedings*, Conference on Formal Ontologies in Information Systems (FOIS-2010), Toronto, Ontario, May 2010.

"Discovering Causal and Temporal Relations in Biomedical Texts" (with Rutu Mulkar-Mehta, Chun-Chi Liu and Xianghong Jasmine Zhou), *Proceedings*, AAAI Spring Symposium on Learning by Reading and Learning to Read, March 2009.

"Augmenting WordNet for Deep Understanding of Text" (with Peter Clark, Christiane Fellbaum, Phil Harrison, John Thompson, and William Murray), *Proceedings*, Symposium on Semantics in Systems for Text Processing (STEP2008), Venice, Italy, September 2008.

"Refining the Meaning of Sense Labels in PDTB: 'Concession' " (with Livio Robaldo and Eleni Miltsakaki), *Proceedings*, Symposium on Semantics in Systems for Text Processing (STEP2008), Venice, Italy, September 2008.

"Using Abduction for Video-Text Coreference" (with Rutu Mulkar-Mehta), *Proceedings*, BOEMIE Workshop, Koblenz, Germany, December 2008.

"Deep Lexical Semantics", *Proceedings*, 9th International Conference on Intelligent Text Processing and Computational Linguistics, Haifa, Israel, February 2008.

"Learning Event Durations from Event Descriptions" (with Feng Pan and Rutu Mulkar), *Proceedings*, 44th Annual Meeting of the Association for Computational Linguistics, Sydney, Australia, pp. 393-400, July 2006.

"An Annotated Corpus of Typical Durations of Events"(with Feng Pan and Rutu Mulkar), *Proceedings*, 5th International Conference on Language Resources and Evaluation, Genoa, Italy, May 2006.

"Encoding Knowledge of Commonsense Psychology" (with Andrew S. Gordon), *Proceedings*, 7th International Symposium on Logical Formalizations of Commonsense Reasoning, Corfu, Greece, pp. 107-114, May 2005.

"Towards an Ontology of Information Structure", *Proceedings*, 7th International Symposium on Logical Formalizations of Commonsense Reasoning, Corfu, Greece, pp. 99-106, May 2005.

"Temporal Aggregates in OWL-Time" (with Feng Pan), *Proceedings*, Workshop on Natural Language-based Knowledge Representations: New Perspectives, Florida Artificial Intelligence Research Society International Conference (FLAIRS 2005), Clearwater Beach, FL, May 2005.

"Toward a Large-Scale Formal Theory of Commonsense Psychology for Metacognition" (with Andrew S. Gordon), to appear in *Proceedings*, AAAI Spring Symposium on Metacognition in Computation, Stanford, CA, March 2005.

"Coverage and Competency in Formal Theories: A Commonsense Theory of Memory" (with Andrew Gordon), to appear in *Proceedings*, Sixth Symposium on Logical Formalizations of Commonsense Reasoning, AAAI 2003 Spring Symposium, Stanford University, California, March 2003.

"Annotating and Reasoning about Time and Events" (with James Pustejovsky), to appear in *Proceedings*, Sixth Symposium on Logical Formalizations of Commonsense Reasoning, AAAI 2003 Spring Symposium, Stanford University, California, March 2003.

"'the'", *Proceedings*, 2002 International Symposium on reference Resolution for Natural Language Processing, pp. 45-49, Alicante, Spain, June 2002.

"DAML-S: Web Service Description for the Semantic Web" (by the DAML Services Coalition: Anupriya Ankolenkar, Mark Burstein, Jerry R. Hobbs, Ora Lassila, David L. Martin, Drew McDermott, Sheila A. McIlraith, Srini Narayanan, Massimo Paolucci, Terry R. Payne and Katia Sycara), *Proceedings*, The First International Semantic Web Conference (ISWC), Chia Laguna, Sardinia, Italy, June, 2002. (Won Ten-Year High-Impact Award, 2011.)

"Towards an Ontology for Time for the Semantic Web", *Proceedings*, LREC 2002 Workshop on Annotation Standards for Temporal Information in Natural Language, pp. 28-35, Las Palmas, Spain, May 2002.

"Information Extraction from Biomedical Text", *Proceedings*, The European

Science Foundation Workshop on Information Extraction in Molecular Biology, Twente, Netherlands, November, 2001.

"DAML-S: Semantic Markup For Web Services" (by the DAML Services Coalition: Anupria Ankolekar, Mark Burstein, Jerry R. Hobbs, Ora Lassila, David L. Martin, Sheila A. McIlraith, Srini Narayanan, Massimo Paolucci, Terry Payne, Katia Sycara, and Honglei Zeng), *Proceedings*, Semantic Web Working Symposium, Stanford University, Stanford, July 2001.

"Optimal Choice of Granularity in Commonsense Estimation: Why Half Orders of Magnitude" (with Vladik Kreinovich), *Proceedings*, Joint 9th IFSA World Congress and 20th NAFIPS International Conference, Vacouver, British Columbia, pp. 1343-1348, July 2001.

"Causality", *Proceedings*, Common Sense 2001, Fifth Symposium on Logical Formalizations of Commonsense Reasoning, pp. 145-155, New York University, New York, New York, May 2001.

"Accessing Information and Services on the DAML-Enabled Web" (with Grit Denker, David Martin, Srini Narayanan, and Richard Waldinger), *Proceedings*, Semantic Web Workshop, World Wide Web Conference, Hong Kong, May 2001.

"Half Orders of Magnitude", *Proceedings*, KR-2000 Workshop on Semantic Approximation, Granularity, and Vagueness, Breckenridge, Colorado, April 2000.

"Multimodal Access to Spatial Data" (with Andrew Kehler), *Proceedings*, Human Computer Interaction Grantees' Workshop, pp. 79-83, Orlando, FL, February 1999.

"Information Extraction Research and Applications: Current Progress and Future Directions" (with Andrew Kehler, Douglas Appelt, John Bear, Matthew Caywood, David Israel, Megumi Kameyama, David Martin, and Claire Monteleoni), *Proceedings*, Tipster Text Program, Phase III, pp. 61-74, San Diego, CA, October 1997.

"Interrelating Interpretation and Generation in an Abductive Framework" (with Richmond H. Thomason) , *Proceedings*, AAAI Fall Symposium Workshop on Communicative Action in Humans and Machines, pp. 97-105, Cambridge, Massachusetts, November 1997.

"A Theory of Parallelism and the Case of VP Ellipsis" (with Andrew Kehler), *Proceedings*, 35th Annual Meeting of the Association for Computational Linguistics, pp. 394-401, Madrid, Spain, July 1997.

"Communicative Goals" (with Richmond H. Thomason and Johanna D. Moore), *Proceedings*, ECAI Workshop on Gaps and Bridges: New Directions in Planning and NLG, Budapest, Hungary, August 1996, pp. 7-12.

"SRI's Tipster II Project" (with Douglas Appelt, John Bear, David Israel, Megumi Kameyama, Andrew Kehler, Mark Stickel, and Mabry Tyson),

Proceedings, Advances in Text Processing, Tipster Program, Phase II, pp. 201-208, Tysons Corner, VA, May 1996.

"TIPSTER Text Phase II Architecture Design" (with Ralph Grishman, Bill Caid, Jamie Callan, Jim Conley, Harold Corbin, Jim Cowie, Kathy DiBella, Ted Dunning, Joe Dzikiewicz, Louise Guthrie, Clint Hyde, Mark Ilgen, Paul Jacobs, Matt Mettler, Bill Ogden, Peggy Otsubo, Bev Schwartz, Ira Sider, Ralph Weischedel, and Remi Zajac), *Proceedings*, Advances in Text Processing, Tipster Program, Phase II, pp. 249-305, Tysons Corner, VA, May 1996.

"SRI International FASTUS System MUC-6 Results and Analysis" (with Douglas E. Appelt, John Bear, David Israel, Megumi Kameyama, and Mabry Tyson), *Proceedings*, Sixth Message Understanding Conference (MUC-6), pp. 237-248, Columbia, Maryland, November 1995.

"A Critical Creative Moment in Learning and Poetry", *Proceedings*, Workshop on Cognition and Creativity, Albi, France, January 1995.

"The Origin and Evolution of Language: A Plausible, Strong AI Account", *Proceedings*, Language Origins Society Meeting, Berkeley, California, July 1994.

"Principles of Template Design" (with David Israel), *Proceedings*, ARPA Human Language Technology Workshop, Princeton, New Jersey, March 1994.

"Summaries from Structure", *Proceedings*, Workshop on Summarizing Text for Intelligent Communication, B. Endres-Niggemeyer, J. Hobbs, and K. Sparck Jones, editors, Schloss Dagstuhl, Germany, December 1993.

"FASTUS: A Finite-State Processor for Information Extraction from Real-World Text", (with Douglas E. Appelt, John Bear, David Israel, Megumi Kameyama, and Mabry Tyson), *Proceedings*. IJCAI-93, Chambery, France, August 1993.

"The SRI MUC-5 JV-FASTUS Information Extraction System", (with Douglas E. Appelt, John Bear, David Israel, Megumi Kameyama, and Mabry Tyson), *Proceedings*, Fifth Message Understanding Conference (MUC-5), Baltimore, Maryland, August 1993.

"The Generic Information Extraction System", *Proceedings*, Fifth Message Understanding Conference (MUC-5), Baltimore, Maryland, August 1993.

"Will Robots Ever Have Literature?", Workshop on Literary Cognition, Information, and Communication, Carleton University, Ottawa, Ontario, June 1993.

"A National Resource Grammar", *Proceedings*, Speech and Natural Language Workshop, Harriman, New York, February 1992, pp. 352-354.

"Translation by Abduction", (with Megumi Kameyama) *Proceedings*, 13th International Conference on Computational Linguistics, Helsinki, Finland, August 1990.

"Two Principles of Parse Preference", (with John Bear) *Proceedings*, 13th International Conference on Computational Linguistics, Helsinki, Finland, August 1990.

"An Integrated Abductive Framework for Discourse Interpretation", *Proceedings*, AAAI Spring Symposium on Abduction, Stanford, California, March 1990.

"The Use of Abduction in Natural Language Processing", *Proceedings*, Nagoya International Symposium on Knowledge Information and Intelligent Communication, Nagoya, Japan, November 1989.

"Interpretation as Abduction", (with Mark Stickel, Paul Martin, and Douglas Edwards), *Proceedings*, 26th Annual Meeting of the Association for Computational Linguistics, Buffalo, New York, June 1988.

"Localizing the Expression of Ambiguity", (with John Bear), *Proceedings*, Second Conference on Applied Natural Language Processing, Austin, Texas, February, 1988.

"Local Pragmatics", (with Paul Martin), *Proceedings*, International Joint Conference on Artificial Intelligence, pp. 520-523. Milano, Italy, August 1987.

"Ontological Promiscuity", *Proceedings*, 23rd Annual Meeting of the Association for Computational Linguistics, Chicago, Illinois, pp. 61-69, July 1985.

"Improper Treatment of Quantification in Ordinary English", *Proceedings*, 21st Annual Meeting of the Association for Computational Linguistics, Cambridge, Massachusetts, pp. 57-63, June 1983.

"Natural Language Access to Structured Text", (with Donald Walker and Robert Amsler), *Proceedings*, Ninth International Conference on Computational Linguistics, Prague, Czechoslovakia, pp. 127-132, July 1982.

"DIALOGIC: A Core Natural Language Processing System", (with Barbara Grosz, Norman Haas, Gary Hendrix, Paul Martin, Robert Moore, Jane Robinson, and Stan Rosenschein), *Proceedings*, Ninth International Conference on Computational Linguistics, Prague, Czechoslovakia, pp. 95-100, July 1982.

"Representing Ambiguity", *Proceedings*, West Coast Conference in Formal Linguistics, Stanford, California, pp. 15-28, January 1982.

"Natural Language Access to Medical Text", (with Donald Walker), *Proceedings*, Fifth Annual Symposium on Computer Applications in Medical Care, Washington, D.C., November 1981.

"Text Plans and World Plans in Natural Discourse", (with Michael Agar), *Proceedings*, International Joint Conference on Artificial Intelligence, pp. 190-196, Vancouver, B.C., August 1981.

"Growing Schemas out of Interviews", (with Michael Agar), *Proceedings*, Third Annual Conference of the Cognitive Science Society, Berkeley, California,

pp. 191-192, August 1981.

"Selective Inferencing", Invited Lecture, *Proceedings*, Third National Conference of Canadian Society for Computational Studies of Intelligence. Victoria, British Columbia, pp. 101-114, May 1980.

"Coherence in English Discourse", *Proceedings*, 7th International Conference on Computational Linguistics, Bergen, Norway, August 1978.

"From English Descriptions of Algorithms into Programs", *Proceedings*, Annual Conference, Association for Computing Machinery, pp. 323-329, Seattle, Washington, October 1977.

"What the Nature of Natural Language Tells us about How to Make Natural-language-like Programming Languages More Natural", *Proceedings*, Symposium on Artificial Intelligence and Programming Languages, pp. 85-93. Rochester, New York, August 1977.

"A General System for Semantic Analysis of English and its Use in Drawing Maps from Directions". *American Journal of Computational Linguistics*, Microfiche 32, 1975.

Selected Technical Reports:

"FASTUS: A System for Extracting Information from Natural-Language Text", (with Douglas Appelt, John Bear, David Israel, and Mabry Tyson), Technical Note 519, Artificial Intelligence Center, SRI International, Menlo Park, California. November 1992.

"Implicature and Definite Reference", Report No. CSLI-87-99, Center for the Study of Language and Information, Stanford Univerity, Stanford, California, May 1987.

"On the Coherence and Structure of Discourse", Report No. CSLI-85-35, Center for the Study of Language and Information, Stanford Univerity, Stanford, California, October 1985.

"Commonsense Summer: Final Report", (with Tom Blenko, Bill Croft, Greg Hager, Henry Kautz, Paul Kube, and Yoav Shoham), Report No. CSLI-85-35, Center for the Study of Language and Information, Stanford Univerity, Stanford, California, October 1985.

"Interpreting Natural Language Discourse", Final Report, National Science Foundation Research Grant No. MCS 78-07121. July 1980.

"38 Examples of Elusive Antecedents from Published Texts", Research Report 77-2, Department of Computer Sciences, City College, City University of New York, August 1977.

"A Computational Approach to Discourse Analysis", Research Report 76-2, Department of Computer Sciences, City College, City University of New York, December 1976.

"A Model for Natural Language Semantics, Part I: The Model", Research Report #36, Department of Computer Science, Yale University, October 1974.

"A Metalanguage for Expressing Grammatical Restrictions in Nodal Spans Parsing of Natural Language", Courant Computer Science Report #2, Courant Institute of Mathematical Sciences, New York University, January 1974. (Ph.D. Thesis)

Unpublished Manuscripts:

Instant Japanese for Smart People, (with Michiko Kosaka), May 1980, almost published by Charles Tuttle Publishers (I objected to the indentured servitude clause in the contract they sent me.)

Discourse and Inference, in progress. Available at http://www.isi.edu/∼hobbs/

Travel Articles:

"Climbing the Matterhorn", Philadelphia *Inquirer*, May 15, 1988; Kansas City *Star*, May 15, 1988; Washington *Post*, June 26, 1988; San Jose *Mercury News*, August 14, 1988; Detroit *News*, March 12, 1989.

"The Bruges Madonna", *Sphere*, the Sabena In-flight Magazine, March 1990.

"The First American Tourist in Albania", Providence *Journal*, January 23, 1994.