Curriculum Vitae

Ipke Wachsmuth

Updated September 2012

Date of birth:	March 27, 1950
Citizenship:	German
Address:	Faculty of Technology
	Bielefeld University
	Universitätsstr. 25
	33615 Bielefeld, Germany
Phone:	+49-521-106-2924 (office), +49-521-106-6999 (secretary)
E-mail:	ipke@techfak.uni-bielefeld.de
WWW:	http://www.techfak.uni-bielefeld.de/~ipke/

EDUCATION

1989 Habilitation in Computer Science, University of Osnabrück, Germany
Thesis: *Zur intelligenten Organisation von Wissensbeständen in künstlichen Systemen*
Mentor: Prof. B. Mahr

1980 Ph.D. (Dr. rer. nat.) in Computer Science, University of Hanover, Germany
Dissertation: *Simultane zellulare Kalküle und lokal-synchrone Zellularautomaten*
Advisor: Prof. G. Bertram, Co-advisor: Prof. K. Döpp

1975 M.S. in Mathematics (Dipl.-Math.), University of Hanover, Germany

1971 B.S. in Mathematics (Dipl.-Vorprüfung), University of Hanover, Germany

PROFESSIONAL EXPERIENCE

04/2009–07/2012	Coordinator, Collaborative Research Center 673 "Alignment in Communication", U Bielefeld
10/2007–present	Principal Investigator, Center of Excellence "Cognitive Interaction Technology", U Bielefeld
10/2002–03/2009	Managing Director, Center for Interdisciplinary Research (ZiF), U Bielefeld
05/1997–06/1997	Visiting Professor, Center for PersonKommunikation (CPK), Aalborg University, Denmark
10/1992–03/1993	Visiting Professor, German National Research Center for Information Technology (GMD), Sankt Augustin/Bonn, Germany
01/1989–present	Professor/chair (C4) of Artificial Intelligence, Faculty of Technology, U Bielefeld
10/1988–12/1988	Interim Professor, University of Bielefeld, Germany
06/1988–09/1988	Senior Research Scientist and Project Leader (BAT Ia), Dept. of Linguistics and Literature, U Osnabrück, Germany
04/1988–05/1988	Assistant Professor (C1), Dept. of Mathematics/Computer Science, University of Osnabrück
10/1986–03/1988	Research Fellow in the LILOG group at IBM Deutschland GmbH, Stuttgart, Germany
10/1985–09/1986	Assistant Professor (C1), Dept. of Mathematics/Computer Science, University of Osnabrück
08/1983–09/1985	Research and Teaching Assistant (A13), Dept. of Mathematics/Computer Science, Univ. of Osnabrück
10/1981–07/1983	Assistant Professor, Dept. of Mathematical Sciences, Northern Illinois University, USA
01/1978-09/1981	Research and Teaching Assistant (A13), Dept. of Mathematics/Philosophy, Univ. of Osnabrück

MEMBERSHIPS IN SCIENTIFIC SOCIETIES

1997 GK – Gesellschaft für Kognitionswissenschaft (German Cognitive Science Society)
1987 DGfS – Deutsche Gesellschaft für Sprachwissenschaft (German Society for Linguistics)
1981 CSS – Cognitive Science Society
1980 AAAI – Association for the Advancement of Artificial Intelligence
1978 GI – Gesellschaft für Informatik (German Society for Computer Science)
1978 DMV – Deutsche Mathematiker-Vereinigung (German Mathematicians Society)

PROFESSIONAL ACTIVITIES (selected)

2010-present	Advisory Board Member of the German Cognitive Science Society (GK)
2009-2012	Vice-Chairman, Friends and Donors of the Center for Interdisciplinary Research (ZiF), U Bielefeld
2008–present	Adjoint member and member of managing board, Research Institute for Cognition and Robotics (CoR-Lab), U Bielefeld
2007-2009	Scientific Board member, Cognitive Interaction Technology - Center of Excellence, U Bielefeld
2006-2012	Executive board member and from 2009 Coordinator of the Collaborative Research Center "Alignment in Communication" (SFB 673), U Bielefeld
2006-present	Associate Editor, "Cognitive Processing" (Springer)
2005-2007	Moderator, European Cognitive Science Umbrella Group formed at COCSCI2005 in Stresa in preparation of a European Cognitive Science steering group
2005-2006	Organizer/leader (with G. Knoblich, Rutgers) of ZiF Research Year on Embodied Communication with 6 associated conferences and workshops
2003-2007	Advisory Board Member of the German Cognitive Science Society (GK)
2002-2004	External Member of Selection Committee, PhD program in Cognitive Science, University of Osnabrück, Germany
2001-2003	President of the German Cognitive Science Society (GK)
1997-2003	Governing Board Member of the German Cognitive Science Society (GK)
1997-present	Founding member and executive committee member of the German-European initiative "Interdisciplinary Colleges Cognitive and Neuro Sciences" (IK)
1997-2009	Member of Editorial Board, "Artificial Intelligence Review" (Kluwer; Springer)
1996-present	Editorial Board, DISKI – Dissertationen zur Künstlichen Intelligenz (Dissertations in Artificial Intelligence), Akademische Verlagsgesellschaft AKA, Heidelberg
1996-1999	Selection Committee, Graduate College "Task-Oriented Communication", U Bielefeld
1995-2012	Advisory Committee, Interdisziplinäres Zentrum für Frauen- und Geschlechter-forschung (IFF) (Women & Gender Studies Center), U Bielefeld
1993-2005	Executive board member and from 1996 Deputy Speaker of the Collaborative Research Center "Situated Artificial Communicators" (SFB 360), U Bielefeld
1993-1996	Coordinator, Section "Artificial Intelligence and Computer Graphics" in the Research Network "Applications of Artificial Intelligence in North-Rhine-Westphalia" (KI-NRW)
1991-1992	Dean of the Faculty of Technology, University of Bielefeld
1989-1993	Advisory Board, Zentrum Technologietransfer Biomedizin Bad Oeynhausen
1988-1993	Founding member and discussion group leader, VDI (German Engineers Association) Commission on Technology Assessment in AI (funded by the Federal Ministry for Research and Technology)
1988-1990	Commissioner for erecting the Computer Science division for the new Faculty of Technology at Bielefeld University and (with R. Giegerich) installing a masters program in "Informatics in the Natural Sciences"
1984-1988	International Committee, International Group for the Psychology of Mathematics Education (PME)

PUBLICATIONS

A. BOOKS

[1] Wachsmuth, I. (2012). *Menschen, Tiere und Max - Natürliche Kommunikation und künstliche Intelligenz.* Berlin Heidelberg: Springer Spektrum.

[2] Kopp, S., & Wachsmuth, I. (Eds.) (2010). *Gesture in Embodied Communication and Human-Computer Interaction.* Berlin: Springer (LNAI 5934).

[3] Wachsmuth, I. & Knoblich, G. (Eds.) (2008). *Modeling Communication with Robots and Virtual Humans.* Berlin: Springer (LNAI 4930).

[4] Wachsmuth, I., Lenzen, M., & Knoblich, G. (Eds.) (2008). *Embodied Communication in Humans and Machines.* Oxford: Oxford University Press.

[5] Rickheit, G., & Wachsmuth, I. (Eds.) (2006). *Situated Communication.* Berlin: Mouton de Gruyter.

[6] Wachsmuth, I., & Sowa, T. (Eds.) (2002). *Gesture and Sign Language in Human-Computer Interaction.* Berlin: Springer (LNAI 2298).

[7] Wachsmuth, I. & Jung, B. (Eds.) (1999). *KogWis99 - Proceedings der 4. Fachtagung der Gesellschaft für Kognitionswissenschaft.* Sankt Augustin: infix.

[8] Wachsmuth, I. & Fröhlich, M. (Eds.) (1998). *Gesture and Sign Language in Human-Computer Interaction.* Berlin: Springer (LNAI 1371).

[9] Wachsmuth, I., Rollinger, C.-R., & Brauer, W. (Eds.) (1995). *KI-95: Advances in Artificial Intelligence.* Berlin Heidelberg New York: Springer (LNAI 981).

[10] Cremers, A.B., Seetzen, J., & Wachsmuth, I. (Eds.) (1994). *Künstliche Intelligenz - Leitvorstellungen und Verantwortbarkeit (Band 2: Tagungsbericht).* Düsseldorf: Verein Deutscher Ingenieure VDI.

[11] Cremers, A.B., Haberbeck, R., Seetzen, J., & Wachsmuth, I. (Eds.) (1992). *Künstliche Intelligenz - Leitvorstellungen und Verantwortbarkeit.* Düsseldorf: Verein Deutscher Ingenieure VDI.

[12] Wachsmuth, I. (1985). *Mathematische Fertigkeiten und Mathematikverständnis.* Bad Salzdetfurth: Franzbecker.

[13] Cohors-Fresenborg, E. & Wachsmuth, I. (Eds.) (1978). *Proceedings of the Second International Conference for the Psychology of Mathematics Education.* Osnabrück: OSM.

Book chapters

[14] Nguyen, N., & Wachsmuth, I. (in press). A computational model of cooperative spatial behavior for virtual humans. In Tenbrink, T., Wiener, J., & Claramunt, C. (Eds.), *Representing Space in Cognition: Behavior, Language, and Formal Models* (pp. xxx - xxx). Oxford: Oxford University Press.

[15] Becker-Asano, C., & Wachsmuth, I. (2010). WASABI as a case study of how missattribution of emotion can be modelled computationally. In Scherer, K.R., Bänzinger, T., & Roesch, E.B. (Eds.), *Blueprint for Affective Computing* (pp. 179 - 193). Oxford: Oxford University Press.

[16] Wachsmuth, I. (2010). ZiF. In Mitcham C., Klein J.T., & Frodeman R. (Eds.), *The Oxford Handbook of Interdisciplinarity* (pp. 292 - 293). Oxford: Oxford University Press.

[17] Wachsmuth, I. (2010). "Ich, Max" – Kommunikation mit Künstlicher Intelligenz. In T. Sutter & A. Mehler (Eds.), *Medienwandel als Wandel von Interaktionsformen* (pp. 135-157). Wiesbaden: Verlag für Sozialwissenschaften. (First published: UTB, 2005)

[18] Wachsmuth, I. (2010). MAX – eine Maschine, mit der man sprechen kann. In Fokus Medien-archiv: Reden Realitäten Visionen 1999 bis 2009/Beiträge zur Mediendokumentation, Band 8 (pp. 201-212). Berlin: LIT Verlag. (Reprinted from Info 7, 2009)

[19] Sowa, T. & Wachsmuth, I. (2009). A computational model for the representation and processing of shape in coverbal iconic gestures. In K. R. Coventry, T. Tenbrink, & J. A. Bateman (Eds.), *Spatial Language and Dialogue* (pp. 132-146). Oxford: Oxford University Press.

[20] Wachsmuth, I. (2009). Der Avatar Max als virtuelles Phänomen. In Hans Esselborn (Ed.), *Ordnung und Kontingenz: Das kybernetische Modell in den Künsten* (pp. 58-66). Würzburg: Königshausen & Neumann.

[21] Kopp, S., Wachsmuth, I., Bonaiuto, J., & Arbib, M. (2008). Imitation in embodied communication – from monkey mirror neurons to artificial humans. In I. Wachsmuth, M. Lenzen, & G. Knoblich (Eds.), *Embodied Communication in Humans and Machines* (pp. 357-390). Oxford: Oxford University Press.

[22] Sowa, T., Kopp, S., Duncan, S., McNeill, D., & Wachsmuth, I. (2008). Implementing a non-modular theory of language production in an embodied conversational agent. In I. Wachsmuth, M. Lenzen, & G. Knoblich (Eds.), *Embodied Communication in Humans and Machines* (pp. 425-450).

Oxford: Oxford University Press.

[23] Wachsmuth, I., Lenzen, M., & Knoblich, G. (2008). Introduction to embodied communication: why communication needs the body. In I. Wachsmuth, M. Lenzen, & G. Knoblich (Eds.), *Embodied Communication in Humans and Machines* (pp. 1-28). Oxford: Oxford University Press.

[24] Becker, C., Kopp, S., & I. Wachsmuth, I. (2007). Why emotions should be integrated into conversational agents. In T. Nishida (Ed.), *Conversational Informatics: An Engineering Approach* (pp. 49-68). Chichester: John Wiley & Sons.

[25] Fink, G. A., Fritsch, J., Leßmann, N., Ritter, H., Sagerer, G., Steil, J. J., & Wachsmuth, I. (2006). Architectures of situated communicators: From perception to cognition to learning. In G. Rickheit & I. Wachsmuth (Eds.), *Situated Communication* (pp. 357-376). Berlin: Mouton de Gruyter.

[26] Kranstedt, A., Lücking, A., Pfeiffer, T., Rieser, H., & Wachsmuth, I. (2006). Deictic object reference in task-oriented dialogue. In G. Rickheit & I. Wachsmuth (Eds.), *Situated Communication* (pp. 155-207). Berlin: Mouton de Gruyter.

[27] Leßmann, N., Kopp, S., & Wachsmuth, I. (2006). Situated interaction with a virtual human – perception, action, and cognition. In G. Rickheit & I. Wachsmuth (Eds.), *Situated Communication* (pp. 287-323). Berlin: Mouton de Gruyter.

[28] Wachsmuth, I. (2005). "Ich, Max" – Kommunikation mit künstlicher Intelligenz. In Ch.S. Herrmann, M. Pauen, J.W. Rieger & S. Schicktanz (Eds.), *Bewusstsein: Philosophie, Neurowissenschaften, Ethik* (pp. 329-354). München: Wilhelm Fink Verlag (UTB).

[29] Wachsmuth, I. (2005). Computersimulationen in der mathematikdidaktischen Grundlagenforschung. In Ch. Kaune, I. Schwank & J. Sjuts (Eds.), *Mathematikdidaktik im Wissenschaftsgefüge – Festschrift für Elmar Cohors-Fresenborg, Band 2* (pp. 179-193). Osnabrück: FMD.

[30] Jörding, T., & Wachsmuth, I. (2002). An anthropomorphic agent for the use of spatial language. In K.R. Coventry & P. Olivier (Eds.), *Spatial Language: Cognitive and Computational Aspects* (pp. 69-86). Dordrecht: Kluwer.

[31] Wachsmuth, I. (2002). Communicative rhythm in gesture and speech. In: P. Mc Kevitt, S. O'Nuállain & C.Mulvihill (Eds.), *Language, Vision and Music* (pp. 117-132). Amsterdam: Benjamins. (Reprinted by permission of Springer-Verlag.)

[32] Jung, B., Hoffhenke, M., Lenzmann, B., & Wachsmuth, I. (2000). Interaktive Montagesimulation in virtuellen Umgebungen. In H. Szczerbicka und T. Uthmann (Eds.): *Modellierung, Simulation und Künstliche Intelligenz* (pp. 193-210). Delft: SCS European Publishing House.

[33] Wachsmuth, I. (2000). The concept of intelligence in AI. In H. Cruse, J. Dean, & H. Ritter (Eds.), *Prerational Intelligence - Adaptive Behavior and Intelligent Systems without Symbols and Logic, Vol. 1* (pp. 43-55). Dordrecht, The Netherlands: Kluwer Academic Publishers.

[34] Rickheit, G. & Wachsmuth, I. (1996). Collaborative Research Centre "Situated Artificial Communicators" at the University of Bielefeld, Germany. In P. Mc Kevitt (Ed.), *Integration of Natural Language Processing and Vision Processing, Vol. IV* (pp. 11-16). Dordrecht: Kluwer. Reprinted from Artificial Intelligence Review 10(3-4).

[35] Wachsmuth, I. & Jung, B. (1996). Dynamic conceptualization in a mechanical-object assembly environment. In P. Mc Kevitt (Ed.), *Integration of Natural Language Processing and Vision Processing, Vol. IV* (pp. 191-214). Dordrecht: Kluwer. Reprinted from Artificial Intelligence Review 10(3-4).

[36] Görz, G. & Wachsmuth, I. (1995). Einleitung zu G. Görz (Ed.), *Einführung in die Künstliche Intelligenz, 2. Aufl.* (pp.1-13). Bonn: Addison-Wesley.

[37] Meyer-Fujara, J., Puppe, F., & Wachsmuth, I. (1995). Expertensysteme und Wissensmodellierung. In G. Görz (Ed.), *Einführung in die Künstliche Intelligenz, 2. Aufl.* (pp. 705-753). Bonn: Addison-Wesley.

[38] Wachsmuth, I. & Cao, Y. (1995). Interactive graphics design with situated agents. In W. Strasser & F. Wahl (Eds.), *Graphics and Robotics* (pp. 73-85). Berlin Heidelberg New York: Springer.

[39] Wachsmuth, I. & Meyer-Fujara, J. (1994). Wissensbasierte Informationsverarbeitung mit Expertensystemen. In H. Best, B. Endres-Niggemeyer, M. Herfurth & H.P.Ohly (Eds.), *Informations- und Wissensverarbeitung in den Sozialwissenschaften* (pp. 103-113). Opladen: Westdeutscher Verlag.

[40] Meyer-Fujara, J., Puppe, F., & Wachsmuth, I. (1993). Expertensysteme und Wissensmodellierung. In G. Görz (Ed.), *Einführung in die Künstliche Intelligenz* (pp. 714-766). Bonn: Addison-Wesley.

[41] Wachsmuth, I. (1993). Künstliche Intelligenz – Herausforderung für die Zukunftsgestaltung. In G. Kaiser, D. Matejovski & J. Fedrowitz (Eds.), *Kultur und Technik im 21. Jahrhundert* (pp. 102-106). Frankfurt/New York: Campus Verlag.

[42] Gängler, B. & Wachsmuth, I. (1992). Antwortgenerierung, flexible Wortwahl und elaborative Inferenzen - ein Regelinventar für LEU/2. In G. Klose, E. Lang & Th. Pirlein (Eds.), *Ontologie und Axiomatik von LILOG* (pp. 179-195). Berlin Heidelberg: Springer (IFB 307).

[43] Görz, G., Kremeier, A., Röpke, H., Schreiber, P., Strube, G., Wachsmuth, I., & Wilker, M. (1992). Mögliche Auswirkungen einer entwickelten KI auf Arbeits- und Lebenswelt. In A.B. Cremers et al. (Eds.) *Künstliche Intelligenz - Leitvorstellungen und Verantwortbarkeit* (pp. 156-170). Düsseldorf: Verein Deutscher Ingenieure VDI.

[44] Wachsmuth, I. & Wilker, M. (1992). Zukunftsauswirkungen der Künstlichen Intelligenz - Einführung und Übersicht. In A.B. Cremers, R. Haberbeck, J. Seetzen & I. Wachsmuth (Eds.) *Künstliche Intelligenz - Leitvorstellungen und Verantwortbarkeit* (pp. 138-142). Düsseldorf: Verein Deutscher Ingenieure VDI.

[45] Wachsmuth, I. & Gängler, B. (1991). Knowledge packets and knowledge packet structures. In O. Herzog & C.-R.Rollinger (Eds.), *Text Understanding in LILOG: Integrating Computational Linguistics and Artificial Intelligence* (pp. 380-393). Berlin Heidelberg: Springer (LNAI 546).

[46] Wachsmuth, I. (1988). Modeling the knowledge base of mathematics learners: Situation-specific and situation-nonspecific knowledge. In H. Mandl & A. Lesgold (Eds.), *Learning Issues for Intelligent Tutoring Systems* (pp. 63-79). New York: Springer.

[47] Behr, M.J., Post, T., & Wachsmuth, I. (1986). Estimation and children's concept of rational number size. In H. Schoen (Ed.), *1986 Yearbook: Estimation* (pp. 103-111). Reston (VA): NCTM.

[48] Wachsmuth, I. (1986). Logische Analyse kognitiver Organisationsstrukturen – Anwendung eines Wissensrepräsentationsmodells zur Erklärung mathematischen Verhaltens. In H. G. Steiner (Ed.), *Grundfragen der Entwicklung mathematischer Fähigkeiten* (pp. 217-228). Köln: Aulis.

[49] Wachsmuth, I. (1985). LAKOS - Ein Modell der Wissensrepräsentation zur Erklärung kognitiven Verhaltens. In H. Mandl & P. M. Fischer (Eds.), *Lernen im Dialog mit dem Computer* (pp. 24-39). München: Urban und Schwarzenberg.

B. JOURNAL ARTICLES

[50] Salem, M., Kopp, S., Wachsmuth, I., Rohlfing, K., & Joublin, F. (2012). Generation and evaluation of communicative robot gesture. *International Journal of Social Robotics, 4*(2), 201-217.

[51] Waltinger, U., Breuing, A., & Wachsmuth, I. (2012). Connecting question answering and conversational agents - contextualizing German questions for interactive question answering systems. *KI - Künstliche Intelligenz, 26*(x), xxx - xxx, DOI 10.1007/s13218-012-0208-1

[52] Boukricha, H., & Wachsmuth, I. (2011). Empathy-based emotional alignment for a virtual human: a three-step approach. *KI - Künstliche Intelligenz, 25*(3), 195 - 204.

[53] Becker-Asano, C., & Wachsmuth, I. (2010). Affective computing with primary and secondary emotions in a virtual human. *Journal of Autonomous Agents and Multi-Agent Systems, 20* (1), 32-49.

[54] Pfeiffer, T., Latoschik, M.E., & Wachsmuth, I. (2009). Evaluation of binocular eye trackers and algorithms for 3D gaze interaction in virtual reality environments. *Journal of Virtual Reality and Broadcasting 5(2008), no. 16*, January 2009, urn:nbn:de: 0009-6-16605.

[55] Wachsmuth, I. (2009). MAX – eine Maschine, mit der man sprechen kann. *Info 7, 24*(3), 2-7.

[56] Becker, C., Kopp, S., Pfeiffer-Leßmann, N., & Wachsmuth, I. (2008). Virtual humans growing up: From primary toward secondary emotions. *Künstliche Intelligenz*, 1/2008, 23-27.

[57] Kopp, S., Bergmann, K., & Wachsmuth, I. (2008). Multimodal communication from multimodal thinking – towards an integrated model of speech and gesture production. *International Journal of Semantic Computing, 2* (1), 115–136.

[58] Rickheit, G. & Wachsmuth, I. (2008). Alignment in communication – Collaborative Research Center 673 at Bielefeld University. *Künstliche Intelligenz*, 2/2008, 62-65.

[59] Wachsmuth, I. (2006). Der Körper spricht mit. *Gehirn & Geist* Nr. 4/2006, 40-47 (Titel).

[60] Wachsmuth, I. (2006). Gestures Offer Insight. *Scientific American Mind* Vol. 17 No. 5, 20-25.

[61] Wachsmuth, I., & Knoblich, G. (2005). Embodied communication in humans and machines. *AI Magazine, 26* (2), 85-86.

[62] Wachsmuth, I. & Knoblich, G. (2005). Embodied communication in humans and machines – a research agenda. *Artificial Intelligence Review, 24* (3-4), 517-522.

[63] Kopp, S., & Wachsmuth, I. (2004). Synthesizing multimodal utterances for conversational agents. *Journal of Computer Animation and Virtual Worlds, 15*, 39-52.

[64] Kopp, S., Jung, B., Lessmann, N., & Wachsmuth, I. (2003). Max – a multimodal assistant in virtual reality construction. *Künstliche Intelligenz, 4/2003*, 11-17.

[65] Jung, B., Kopp, S., Latoschik, M., Sowa, T., Wachsmuth, I. (2000). Virtuelles Konstruieren mit Gestik und Sprache. *Künstliche Intelligenz, 2/2000*, 5-11.

[66] Wachsmuth, I. (2000). Kommunikative Rhythmen in Gestik und Sprache. *Kognitionswissenschaft, 8*(4), 151-159.

[67] Kessler, K., Hoffhenke, M., Rickheit, G. & Wachsmuth, I. (1999). Dynamische Konzept-

verarbeitung mit imaginalen und assoziativen Strukturen. *Kognitionswissenschaft 8* (3), 115-122.

[68]   Wachsmuth, I. & Rickheit, G. (Journal issue eds.) (1999). *Kognitionswissenschaft 8* (3), (Leitthema "Situierte Künstliche Kommunikatoren), Springer 1999.

[69]   Behr, M.J., Wachsmuth, I., & Post, T. (1998). Rational number learning aids: Transfer from continuous models to discrete models (selected for retrospective reprint from *Focus 10*(4), 1988, 1-18). *Focus on Learning Problems in Mathematics 20*(1), 63-81.

[70]   Rickheit, G. & Wachsmuth, I. (1996). Collaborative Research Centre "Situated Artificial Communicators" at the University of Bielefeld, Germany. *Artificial Intelligence Review, 10*(3-4), 1996, 65-170.

[71]   Wachsmuth, I. & Jung, B. (1996). Dynamic conceptualization in a mechanical-object assembly environment. *Artificial Intelligence Review, 10*(3-4), 1996, 345-368.

[72]   Antoniou, G. & Wachsmuth, I. (1994). Structuring and modules for knowledge bases: Motivation for a new model. *Knowledge-Based Systems, 7* (1), 49-51.

[73]   Wachsmuth, I., Krüger, W., & Cao, Y. (1994). Virtuelle Räume. *Künstliche Intelligenz, 1*/1994, 26-33.

[74]   Behr, M.J., Wachsmuth, I., & Post. T. (1988). Rational number learning aids: Transfer from continuous models to discrete models. *Focus on Learning Problems in Mathematics, 10* (4), 1-18.

[75]   Bright, G.W., Behr, M.J., Post, T.R., & Wachsmuth, I. (1988). Identifying fractions on number lines. *Journal for Research in Mathematics Education, 19* (3), 215-232.

[76]   Wachsmuth, I. & Lorenz, J.H. (1987). Sharpening one's diagnostic skill by simulating students' error behaviors. *Focus on Learning Problems in Mathematics 9* (2), 43-56.

[77]   Wachsmuth, I. & Becker, J.P. (1986). The role of technology in the cognitive development of mathematics learners. *Journal of Mathematical Behavior 5* (2), 209-232.

[78]   Wachsmuth, I., Bright, G., Behr, M., & Post, T. (1986). Assessing fifth grade children's rational number knowledge in a non-verbal application context: The darts game. *Recherches en Didactique des Mathématiques 7* (3), 51-74.

[79]   Behr, M.J., Wachsmuth, I., & Post, T.R. (1985). Construct a sum: A measure of children's understanding of fraction size. *Journal for Research in Mathematics Education 16* (2), 120-131.

[80]   Post, T.R., Wachsmuth, I., Lesh, R., & Behr, M.J. (1985). Order and equivalence of rational numbers: A cognitive analysis. *Journal for Research in Mathematics Education 16* (1), 18-36.

[81]   Behr, M.J., Wachsmuth, I., Post, T.R., & Lesh, R. (1984). Order and equivalence of rational numbers: A clinical teaching experiment. *Journal for Research in Mathematics Education 15* (5), 323-341.

[82]   Wachsmuth, I. (1983). Skill automaticity in mathematics instruction: A response to Gagné. *Journal for Research in Mathematics Education 14* (3), 204-209.

[83]   Wachsmuth, I. (1983). Locally synchronous cellular automata. *Acta Cybernetica 6* (1), 55-78.

[84]   Wachsmuth, I. (1982). Kalküle, Spiele und Lernen. *Der Mathematik-Unterricht 6/82*, 6-17.

[85]   Wachsmuth, I. (1981). Two modes of thinking - also relevant for the learning of mathematics? *For the Learning of Mathematics 2* (2), 38-45.

C. CONFERENCE PAPERS

[86]   Breuing, A., & Wachsmuth, I. (2012). Let's talk topically with artificial agents! - Providing agents with humanlike topic awareness in everyday dialog situations. *ICAART 2012 - Proceedings of the 4th International Conference on Agents and Artificial Intelligence* (Vol. 2, pp. 62 - 71). Vilamoura, Portugal: SciTePress.

[87]   Fröhlich, J., & Wachsmuth, I. (2012). Acoustically enriched virtual worlds with minimum effort. *VR '12 - Proceedings of the 2012 IEEE Virtual Reality*, pp. 147-148.

[88]   Inden, B., Malisz, Z., Wagner, P., & Wachsmuth, I. (2012). Rapid entrainment to spontaneous speech: A comparison of oscillator models. *Proceedings of the 34th Annual Conference of the Cognitive Science Society*, pp. 1721-1726.

[89]   Kim, E.-S., Kim, J., Pfeiffer, T., Wachsmuth, I., & Zhang, B.-T. (2012). `Is this right?' or `Is that wrong?': Evidence from dynamic eye-hand movement in decision making. *Proceedings of the 34th Annual Conference of the Cognitive Science Society*, p. 2723.

[90]   Malisz, Z., Inden, B., Wachsmuth, I., & Wagner, P. (2012). An oscillator based modeling of German spontaneous speech rhythm. *Perspectives on Rhythm and Timing workshop - Book of Abstracts*, Glasgow, UK, p. 38.

[91]   Mattar, N., & Wachsmuth, I. (2012). Small talk is more than chit-chat - exploiting structures of casual conversations for a virtual agent. In Glimm, B., & Krüger, A. (Eds.), *KI 2012: Advances in Artificial Intelligence* (pp. xxx-xxx). Berlin: Springer (LNAI 7526).

[92]   Mattar, N., & Wachsmuth, I. (2012). Who are you? On the acquisition of information about people for an agent that remembers. *ICAART 2012 - Proceedings of the 4th International Conference on Agents and Artificial Intelligence* (Vol. 2, pp. 98 - 105). Vilamoura, Portugal: SciTePress.

[93]   Pfeiffer-Leßmann, N., Pfeiffer, T., & Wachsmuth, I. (2012). An operational model of joint attention - timing of the initiate-act in interactions with a virtual human. *Proceedings of KogWis 2012*, pp. xxx-xxx, to appear.

[94]   Pfeiffer-Leßmann, N., Pfeiffer, T., & Wachsmuth, I. (2012). An operational model of joint attention - timing of gaze patterns in interactions between humans and a virtual human. *Proceedings of the 34th Annual Meeting of the Cognitive Science Society*, pp. 851 - 856.

[95]   Rabe, F., & Wachsmuth, I. (2012). Cognitively motivated episodic memory for a virtual guide. *ICAART 2012 - Proceedings of the 4th International Conference on Agents and Artificial Intelligence* (Vol. 1, pp. 524 - 527). Vilamoura, Portugal: SciTePress.

[96]   Wagner, P., Inden, B., Malisz, Z., & Wachsmuth, I. (2012). 'Ja, mhm, ich verstehe dich' - Oszillator-basiertes Timing multimodaler Feedback-Signale in spontanen Dialogen. *ESSV 2012 - Elektronische Sprachsignalverarbeitung*, Cottbus.

[97]   Boukricha, H., & Wachsmuth, I. (2011). Mechanism, modulation, and expression of empathy in a virtual human. *Proceedings of the IEEE SSCI2011 - Symposium Series on Computational Intelligence, Workshop on Affective Computational Intelligence (WACI)* (pp. 30 - 37). IEEE.

[98]   Boukricha, H., & Wachsmuth, I. (2011). Modeling empathy for a virtual human: how, when and to what extent? (Extended Abstract). *Proceedings of the 10th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2011)*, pp. 1035 - 1036.

[99]   Boukricha, H., Nguyen, N., & Wachsmuth, I. (2011). Sharing emotions and space - empathy as a basis for cooperative spatial interaction. In Kopp, S., Marsella, S., Thorisson, K., & Vilhjalmsson, H.H. (Eds.), *Proceedings IVA 2011* (pp. 350 - 362). Berlin Heidelberg: Springer (LNAI 6895).

[100]   Breuing, A., Waltinger, U., & Wachsmuth, I. (2011). Harvesting Wikipedia knowledge to identify topics in ongoing natural language dialogs. *Proceedings of the 2011 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT 2011)* (pp. 445 - 450). IEEE.

[101]   Breuing, A., Waltinger, U., & Wachsmuth, I. (2011). Talking topically to the artificial agent Max. *Poster Session Abstracts, Interdisciplinary College IK 2011* (p. 488).

[102]   Fröhlich, J., & Wachsmuth, I. (2011). A Phong-based concept for 3D-audio generation. In Dickmann L., Volkmann G., Malaka R., Boll S., Krüger A., et al. (Eds.), *Smart Graphics* (pp. 184 - 187). Berlin: Springer (LNCS 6815).

[103]   Fröhlich, J., & Wachsmuth, I. (2011). Ein wissensbasiertes Konzept für die 3D Klanggenerierung in virtuellen Welten. In Gausemeier J., Grafe M., & Meyer auf der Heide F. (Eds.), *10. Paderborner Workshop Augmented & Virtual Reality in der Produktentstehung* (pp. 133 - 143). Paderborn: Heinz Nixdorf Institut (HNI Verlagsschriftenreihe Band 295).

[104]   Jauk, I., Wachsmuth, I., & Wagner, P. (2011). Dynamic perception-production oscillation model in human-machine communication. *ICMI 2012 - Proceedings of International Conference of Multimodal Interaction* (pp. 213 - 216). ACM.

[105]   Mattar, N., & Wachsmuth, I. (2011). How we help Max not to be lonely. *Poster Session Abstracts, Interdisciplinary College IK 2011* (pp. 508).

[106]   Nguyen, N., & Wachsmuth, I. (2011). From body space to interaction space - modeling spatial cooperation for virtual humans. *Proceedings of the 10th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2011)*, Vol. 3, pp. 1047 - 1054.

[107]   Pfeiffer, T., & Wachsmuth, I. (2011). Dreidimensionale Erfassung visueller Aufmerksamkeit für Usability-Bewertungen an virtuellen Prototypen. In Gausemeier J., Grafe M., & Meyer auf der Heide F. (Eds.), *10. Paderborner Workshop Augmented and Virtual Reality in der Produktentstehung* (pp. 39 - 51). Paderborn: Heinz Nixdorf Institut (HNI Verlagsschriftenreihe Band 295).

[108]   Pfeiffer, T., Liguda, C., Wachsmuth, I., & Stein, S. (2011). Living with a virtual agent: seven years with an embodied conversational agent at the Heinz Nixdorf MuseumsForum. In Barbieri, S., Scott, K., & Ciolfi, L. (Eds.), *Re-Thinking Technology in Museums 2011 - Emerging Experiences* (pp. 121 - 131). University of Limerick, Limerick, Ireland.

[109]   Rabe, F., & Wachsmuth, I. (2011). An event memory for an embodied cooperative virtual guide. *Poster Session Abstracts, Interdisciplinary College IK 2011* (p. 510).

[110]   Salem, M., Kopp, S., Wachsmuth, I., & Joublin, F. (2011). A multimodal scheduler for synchronized humanoid robot gesture and speech. *Book of Extended Abstracts of the 9th International Gesture Workshop (GW2011)* (pp. 64 - 67).

[111]   Wachsmuth, I. (2011). Wissensbasierte Methoden für Intelligente Virtuelle Realität. In Gausemeier J., Grafe M., & Meyer auf der Heide F. (Eds.), *10. Paderborner Workshop Augmented &*

Virtual Reality in der Produktentstehung (pp. 5 - 12). Paderborn: Heinz Nixdorf Institut (HNI Verlagsschriftenreihe Band 295).

[112] Waltinger, U., Breuing, A., & Wachsmuth, I. (2011). Digital fruits for lunch: feeding embodied conversational agents with Wikipedia knowledge. *Poster Session Abstracts, Interdisciplinary College IK 2011* (pp. 524).

[113] Waltinger, U., Breuing, A., & Wachsmuth, I. (2011). Interfacing virtual agents with collaborative knowledge: open domain question answering using Wikipedia-based topic models. In Walsh T. (Ed.), *Proceedings of the 22nd International Joint Conference on Artificial Intelligence (IJCAI–11)* (pp. 1896 - 1902). Barcelona, Spain: AAAI Press.

[114] Breuing, A., & Wachsmuth, I. (2010). Equipping a conversational agent with access to Wikipedia knowledge. *Proceedings of the KogWis 2010* (pp. 89 - 89). Potsdam: Universitätsverlag Potsdam.

[115] Mattar, N., & Wachsmuth, I. (2010). A person memory for an artificial interaction partner. *Proceedings of the KogWis 2010* (pp. 69 - 70). Potsdam: Universitätsverlag Potsdam.

[116] Rabe, F., & Wachsmuth, I. (2010). May I guide you? – context-aware embodied cooperative systems in virtual environments. *Proceedings of KogWis 2010* (pp. 71 - 72). Potsdam: Universitätsverlag Potsdam.

[117] Salem, M., Kopp, S., Wachsmuth, I., & Joublin, F. (2010). Generating robot gesture using a virtual agent framework. *Proceedings of the 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems* (pp. 3592 - 3597).

[118] Salem, M., Kopp, S., Wachsmuth, I., & Joublin, F. (2010). Towards an integrated model of speech and gesture production for multi-modal robot behavior. *Proceedings of the 2010 IEEE International Symposium on Robot and Human Interactive Communication* (pp. 649 - 654).

[119] Salem, M., Kopp, S., Wachsmuth, I., & Joublin, F. (2010). Generating multi-modal robot behavior based on a virtual agent framework. In *Proceedings of the ICRA 2010 Workshop on Interactive Communication for Autonomous Intelligent Robots (ICAIR)*, 23-25.

[120] Boukricha, H., & Wachsmuth, I. (2009). Towards facial mimicry for a virtual human. In D. Reichardt (Ed.), *Proc. 4th Workshop on Emotion and Computing* (pp. 32-39), in conj. with the 32th German Conf. on Artificial Intelligence (KI2009), Paderborn (ISSN 1865-6374).

[121] Boukricha, H., Wachsmuth, I., Hofstätter, A., & Grammer, K. (2009). Pleasure-Arousal-Dominance driven facial expression simulation. In *Proc. 3rd International Conference on Affective Computing and Intelligent Interaction, ACII 2009* (pp. 119-125). Amsterdam: IEEE.

[122] Fröhlich, C., Biermann, P., Latoschik, M. E., & Wachsmuth, I. (2009). Processing iconic gestures in a multimodal virtual construction environment. In M. Dias, S. Gibet, M. M. Wanderley, R. Bastos (Eds.), *Gesture-Based Human-Computer Interaction and Simulation* (pp. 187-192). Berlin: Springer (LNAI 5085).

[123] Fröhlich, C., Wachsmuth, I., & Latoschik, M. E. (2009). Virtuelle Werkstatt – Multimodale Inter-aktion für intelligente virtuelle Konstruktion. In J. Gausemeier, M. Grafe (Eds.), *8. Paderborner Workshop Augmented & Virtual Reality in der Produktentstehung* (pp. 241-255). Paderborn: HNI.

[124] Nguyen, N., & Wachsmuth, I. (2009). Modeling peripersonal action space for virtual humans using touch and proprioception. In Zs. Ruttkay, M. Kipp, A. Nijholt, & H. H. Vilhjalmsson (Eds.), *Proceedings of the 9th Conference on Intelligent Virtual Agents* (pp. 63–75). Berlin: Springer (LNAI 5773).

[125] Nguyen, N., & Wachsmuth, I. (2009). Modeling peripersonal action space for a virtual human by learning a tactile body schema. In B. Mertsching, M. Hund, & Z. Aziz (Eds.), *KI 2009: Advances in Artificial Intelligence* (pp. 516-523). Berlin: Springer (LNAI 5803).

[126] Pfeiffer-Lessmann, N., & Wachsmuth, I. (2009). Formalizing joint attention in cooperative inter-action with a virtual human. In B. Mertsching, M. Hund, & Z. Aziz (Eds.), *KI 2009: Advances in Artificial Intelligence* (pp. 540–547). Berlin: Springer (LNAI 5803).

[127] Salem, M., Kopp, S., Wachsmuth, I., & Joublin, F. (2009). Towards meaningful robot gesture. In H. Ritter, G. Sagerer, R. Dillmann, & M. Buss (Eds.), *Human Centered Robot Systems* (pp. 173–182). Berlin: Springer.

[128] Becker-Asano, C., & Wachsmuth, I. (2008). Affect simulation with primary and secondary emotions. In H. Prendinger et al. (Eds.), *Intelligent Virtual Agents* (pp. 15-28). Berlin: Springer (LNCS 5208).

[129] Boukricha, H., Nguyen N., & Wachsmuth, I. (2008). Introducing Emma as testbed for emotional alignment. Interdisciplinary College IK 2008 (March 7-12, 2008 Günne, Germany), Poster Session Book of Abstracts (B. Loos & V. Micelli, Eds.), p. 4.

[130] Brüning, B.A., Latoschik, M.E., & Wachsmuth, I. (2008). Interaktives Motion Capturing zur Echtzeitanimation virtueller Agenten. In: Schumann, M. & Kuhlen, T. (Eds.), *Virtuelle und Erweiterte Realität, 5. Workshop der GI-Fachgruppe VR/AR* (pp. 25-36). Aachen: Shaker.

[131] Pfeiffer, T., Latoschik, M., & Wachsmuth, I. (2008). Conversational pointing gestures for virtual reality interaction: Implications from an empirical study. *IEEE Virtual Reality Conference VR'08*, pp. 281-282.

[132] Pfeiffer, T., & Wachsmuth, I. (2008). Social presence: The role of interpersonal distances in affective computer-mediated communication. In *Proceedings of the 11th International Workshop on Presence* (pp. 275-279). Padova, Italy: CLEUP Cooperativa Libraria Universitaria Padova.

[133] Pfeiffer-Lessmann, N., & Wachsmuth, I. (2008). Toward alignment with a virtual human – achieving joint attention. In Dengel, A.R., Berns, K., & Breuel, T.M. (Eds.), *KI 2008: Advances in Artificial Intelligence* (pp. 292-299). Berlin: Springer (LNAI 5243).

[134] Wachsmuth, I. (2008). Cognitive Interaction Technology: Humans, Robots, and Max. *Proceedings ICKS2008, International Conference on Informatics Education and Research for Knowledge-Circulating Society*, Kyoto 17 Jan 2008, pp. 4-5.

[135] Wachsmuth, I. (2008). 'I, Max' – Communicating with an artificial agent. In Wachsmuth, I. & Knoblich, G. (Eds.), *Modeling Communication with Robots and Virtual Humans* (pp. 279-295). Berlin: Springer (LNAI 4930).

[136] Wachsmuth, I. (2008). Virtual humans with affective minds: Recent research at Bielefeld. *Proc. Third International Conference on Cognitive Science*, Moscow, Russia (June 20-25, 2008), 166-167.

[137] Biermann, P., Fröhlich, C., Latoschik, M.E., & Wachsmuth, I. (2007). Semantic information and local constraints for parametric parts in interactive virtual construction. *Proceedings of the 8th International Symposium on Smart Graphics (SG2007)*, Kyoto, Japan, June 2007, pp. 124-134.

[138] Boukricha, H., Becker, C., & Wachsmuth, I. (2007). Simulating empathy for the virtual human Max. In *Proceedings of the 2nd Workshop on Emotion and Computing* (pp. 23-28), in conj. with the 30th Annual German Conference on Artificial Intelligence (KI2007), Osnabrück (ISSN 1865-6374).

[139] Nguyen, N., Wachsmuth, I., & S. Kopp (2007). Touch perception and emotional appraisal for a virtual agent. *Proc. of the 2nd Workshop on Emotion and Computing* (pp. 17-22), in conj. with the 30th Annual German Conference on Artificial Intelligence (KI2007), Osnabrück (ISSN 1865-6374).

[140] Pfeiffer, T., Donner, M., Latoschik, M. E., & Wachsmuth, I. (2007). 3D fixations in real and virtual scenarios. Journal of Eye Movement Research, Special issue: Abstracts of the ECEM 2007 (14th European Conference on Eye Movements), p. 13.

[141] Pfeiffer, T., Donner, M., Latoschik, M.E., & Wachsmuth, I. (2007). Blickfixationstiefe in stereoskopischen VR-Umgebungen: Eine vergleichende Studie. In M.E. Latoschik, & B. Fröhlich (Eds.), *Vierter Workshop Virtuelle und Erweiterte Realität der GI-Fachgruppe VR/AR* (pp. 113-124). Aachen: Shaker.

[142] Pfeiffer, T., & Wachsmuth, I. (2007). Interpretation von Objektreferenzen in multimodalen Äußerungen. *Kognitionsforschung 2007 – Beiträge zur 8. Jahrestagung der Gesellschaft für Kognitionswissenschaft* (pp. 109-110). Aachen: Shaker.

[143] Becker, C., & Wachsmuth, I. (2006). Modeling primary and secondary emotions for a believable communication agent. In *Proceedings of the First Workshop on Emotion and Computing* (pp. 31-34), in conj. with the 29th Annual German Conference on Artificial Intelligence (KI2006), Bremen.

[144] Becker, C., & Wachsmuth, I. (2006). Playing the cards game SkipBo against an emotional Max. In *Proceedings of the First Workshop on Emotion and Computing* (p. 64), in conj. with the 29th Annual German Conference on Artificial Intelligence (KI2006), Bremen.

[145] Becker, C., Leßmann, N., Kopp, S., & Wachsmuth, I. (2006). Connecting feelings and thoughts – modeling the interaction of emotion and cognition in embodied agents. *Proceedings of the Seventh International Conference on Cognitive Modeling (ICCM-06)*, Trieste: Edizioni Goliardiche, 32-37.

[146] Kopp, S., Becker, C., & Wachsmuth, I. (2006). The Virtual Human Max - Modeling Embodied Conversation. In *KI 2006 - Demo Presentations, Extended Abstracts* (pp. 21-24).

[147] Kranstedt, A., Lücking, A., Pfeiffer, T., Rieser, H., & Wachsmuth, I. (2006). Deixis: How to determine demonstrated objects using a pointing cone. In S. Gibet, N. Courty & J.-F. Kamp (Eds.), *Gesture in Human-Computer Interaction and Simulation* (pp. 300-311). Berlin: Springer (LNAI 3881).

[148] Becker, C., Nakasone, A., Prendinger, H., Ishizuka, M., & Wachsmuth, I. (2005). Physiologically interactive gaming with the 3D agent Max. *JSAI-05 Workshop on Conversational Informatics*, in conjunction with the 19th Annual Conf. of the Japan Society for Artificial Intelligence, pp. 37-42.

[149] Becker, C., Prendinger, H., Ishizuka, M., & Wachsmuth, I. (2005). Evaluating affective feedback of the 3D agent Max in a competitive cards game. In J. Tao, T. Tan & R.W. Picard (Eds.), *Affective Computing and Intelligent Interaction* (pp. 466-473). Berlin: Springer (LNCS 3784).

[150] Becker, C., Prendinger, H., Ishizuka, M., & Wachsmuth, I. (2005). Empathy for Max (Preliminary project report). *Proc. 2005 International Conference on Active Media Technology (AMT-05)*, pp. 541-545.

[151] Kopp, S., Gesellensetter, L., Krämer, N.C., & Wachsmuth, I. (2005). A conversational agent as

9

museum guide – design and evaluation of a real-world application. In T. Panayiotopoulos et al. (Eds.), *Intelligent Virtual Agents* (pp. 329-343). Berlin: Springer (LNAI 3661).

[152] Kranstedt, A., & Wachsmuth, I. (2005). Incremental generation of multimodal deixis referring to objects. *Proc. 10th European Workshop on Natural Language Generation* (ENLG-05; Aberdeen, 8-10 August 2005), pp. 75-82.

[153] Latoschik, M. E., Biermann, P. & Wachsmuth, I. (2005). Knowledge in the loop: Semantics representation for multimodal simulative environments. *Proceedings 5th International Symposium on Smart Graphics* (pp. 25-39). Berlin: Springer (LNCS 3638).

[154] Sowa, T., & Wachsmuth, I. (2005). A model for the representation and processing of shape in coverbal iconic gestures. In K. Opwis & I.-K. Penner (Eds.), *Proceedings of KogWis05* (pp. 183-188). Basel: Schwabe Verlag.

[155] Wachsmuth, I. (2005). Studying situated communication with an embodied agent. *Proceedings of the Twenty-Seventh Annual Conference of the Cognitive Science Society* (Stresa, Italy, July 21-23, 2005), p. 44.

[156] Wachsmuth, I. (2005). Multimodale Interaktion in Mensch-Maschine-Systemen. In L. Urbas & Ch. Steffens (Eds.), *Zustandserkennung und Systemgestaltung – 6. Berliner Werkstatt Mensch-Maschine-Systeme (ZMMS Spektrum, Band 19)*, pp. 1-6. Düsseldorf: VDI.

[157] Wachsmuth, I. (2005). Kommunikation und Körper (Embodied Communication). In Graumann, G. (Ed.), *Beiträge zum Mathematikunterricht 2005* (pp. 41-47). Hildesheim: Franzbecker.

[158] Becker, C., Kopp, S., & Wachsmuth, I. (2004). Simulating the emotion dynamics of a multimodal conversational agent. In E. André, L. Dybkjaer, W. Minker, P. Heisterkamp (Eds.), *Affective Dialogue Systems* (pp. 154-165). Berlin: Springer (LNAI 3068).

[159] Biermann, P., & Wachsmuth, I. (2004). Non-physical simulation of gears and modifiable connections in virtual reality. *Proceedings 6th Virtual Reality International Conference (IEEE VRIC 2004)*, Laval, France, 159-164.

[160] Kopp, S., Sowa, T., & Wachsmuth, I. (2004). Imitation games with an artificial agent: from mimicking to understanding shape-related iconic gestures. In A. Camurri & G. Volpe (Eds.), *Gesture-based Communication in Human-Computer Interaction* (pp. 436-447). Berlin: Springer (LNAI 2915).

[161] Kranstedt, K., Kühnlein, P., & Wachsmuth, I. (2004). Deixis in multimodal human computer interaction: an interdisciplinary approach. In A. Camurri & G. Volpe (Eds.), *Gesture-based Communication in Human-Computer Interaction* (pp. 112-123). Berlin: Springer (LNAI 2915).

[162] Kranstedt, A., & Wachsmuth, I. (2004). Situated generation of multimodal deixis in task-oriented dialogue. In A. Belz, R. Evans & P. Piwek (Eds.), INLG04 Posters: Extended abstracts of posters presented at the Third International Conference on Natural Language Generation, University of Brighton, UK (Technical Report No. ITRI-04-01).

[163] Leßmann, N., Kranstedt, A., & Wachsmuth, I. (2004). Towards a cognitively motivated processing of turn-taking signals for the embodied conversational agent Max. *Proceedings Workshop Embodied Conversational Agents: Balanced Perception and Action* (pp. 57-64). AAMAS '04, New York.

[164] Biermann, P., & Wachsmuth, I. (2003). An implemented approach for a visual programming environment in VR. *Proceedings Fifth Virtual Reality International Conference (VRIC 2003)*, Laval, France, 229-234.

[165] Fink, G.A., Fritsch, J., Leßmann, N., Ritter, H., Sagerer, G., Steil, J.J., & I. Wachsmuth (2003). Architekturen situierter Kommunikatoren: Von Perzeption über Kognition zum Lernen. In K. Dittrich et al. (Eds.), *Informatik 2003, Band 2* (pp. 29-44). Bonn: Lecture Notes in Informatics (LNI P-35).

[166] Leßmann, N., & Wachsmuth, I. (2003). A cognitively motivated architecture for an anthropomorphic artificial communicator. In: *Proceedings of the Fifth International Conference on Cognitive Modeling (ICCM-5 2003)*, Bamberg, April 2003, 277-278.

[167] Sowa, T., & Wachsmuth, I. (2003). Coverbal iconic gestures for object descriptions in virtual environments: An empirical study. In: M. Rector, I. Poggi & N. Trigo (Eds.), *Proceedings of the Conference "Gestures. Meaning and Use."* , Porto, Portugal, 365-376.

[168] Voss, I., & Wachsmuth, I. (2003). Anticipation in a VR-based anthropomorphic construction assistant. In J. Jacko & C. Stephanidis (Eds.), *Human-Computer Interaction, Theory and Practice (Part I)*, pp. 1283-1287. London: Lawrence Erlbaum Associates.

[169] Wachsmuth, I. (2003). Embodied Communication. In F. Schmalhofer, R. Young & G. Katz (Eds.), *Proceedings of the EuroCogSci03*, p. 15. Mahwah, NJ: Lawrence Erlbaum Associates.

[170] Biermann, P., Jung, B., Latoschik, M., & Wachsmuth, I. (2002). Virtuelle Werkstatt: A platform for multimodal assembly in VR. In *Proceedings Fourth Virtual Reality International Conference (VRIC 2002)*, Laval, France, 19-21 June 2002, 53-62.

[171] Kopp, S., & Wachsmuth, I. (2002). Model-based animation of coverbal gesture. In *Proceedings of*

Computer Animation 2002, IEEE Press, 252-257.

[172] Kranstedt, A., Kopp, S., & Wachsmuth, I. (2002). MURML: A multimodal utterance representation markup language for conversational agents. In Proc. Workshop *Embodied conversational agents*, First Int. Joint Conference on Autonomous Agents & Multi-Agent Systems, Bologna, Italy.

[173] Jung, B., Latoschik, M., Biermann, P., & Wachsmuth, I. (2002). Virtuelle Werkstatt. In J. Gausemeier & M. Grafe (Eds): *1. Paderborner Workshop Augmented & Virtual Reality in der Produktentstehung (pp. 185-196)*, Paderborn: HNI.

[174] Sowa, T., & Wachsmuth, I. (2002). Interpretation of shape-related iconic gestures in virtual environments. In I. Wachsmuth & T. Sowa (Eds.), *Gesture and Sign Language in Human-Computer Interaction* (pp. 21-33). Berlin: Springer (LNAI 2298).

[175] Wachsmuth, I., & Kopp, S. (2002). Lifelike gesture synthesis and timing for conversational agents. In I. Wachsmuth & T. Sowa (Eds.), *Gesture and Sign Language in Human-Computer Interaction* (pp. 120-133). Berlin: Springer (LNAI 2298).

[176] Wachsmuth, I., & Leßmann, N. (2002). Eine kognitiv motivierte Architektur für einen anthropomorphen Künstlichen Kommunikator. In: Tagungsbeiträge "*Human Centered Robotic Systems 2002*", Karlsruhe, 141-148.

[177] Wachsmuth, I., Voss, I., Sowa, T., Latoschik, M.E., Kopp, S., Jung, B. (2001). Multimodale Interaktion in der Virtuellen Realität. In: H. Oberquelle, R. Oppermann, J. Krause (Eds.), *Mensch & Computer 2001* (pp. 265-274). Stuttgart: Teubner.

[178] Kopp, S., & Wachsmuth, I. (2000). Planning and motion control in lifelike gesture: A refined approach. *Proceedings of Computer Animation 2000* (pp. 92-97). IEEE Computer Society Press.

[179] Kopp, S., & Wachsmuth, I. (2000). A knowledge-based approach for lifelike gesture animation. In W. Horn (Ed.), *ECAI 2000 - Proceedings of the 14th European Conference on Artificial Intelligence* (pp. 663-667). Amsterdam: IOS Press.

[180] Wachsmuth, I. (2000). Rhythmus in der Mensch-Maschine-Kommunikation. In H. Bayen & J. Perl (Eds.), *Informatik im Sport VII* (pp. 67-72). Köln: Sport und Buch Strauss.

[181] Hoffhenke, M. & Wachsmuth, I. (1999). Object recognition with shape prototypes in a 3D construction scenario. In W. Burgard, Th. Christaller & A. B. Cremers (Eds.), *KI-99: Advances in Artificial Intelligence* (pp. 231-242). Berlin: Springer (LNAI 1701).

[182] Hoffhenke, M. & Wachsmuth, I. (1999). Objektrepräsentationen mit imaginalen Prototypen. In Wachsmuth, I. & Jung, B. (Eds.), *KogWis99 - Proceedings der 4. Fachtagung der Gesellschaft für Kognitionswissenschaft* (pp. 292-293). Sankt Augustin: infix.

[183] Kopp, S. & Wachsmuth, I. (1999). Natural timing in coverbal gesture of an articulated figure, Working notes, Workshop 'Communicative Agents', Autonomous Agents '99, Seattle, WA.

[184] Latoschik, M.E., Jung, B., & Wachsmuth, I. (1999). Multimodale Interaktion mit einem System zur Virtuellen Konstruktion. In K. Beiersdörfer, G. Engels & W. Schäfer (Eds.), *Informatik '99 – 29. Jahrestagung der Gesellschaft für Informatik* (pp. 88-97). Berlin: Springer.

[185] Sowa, T. & Wachsmuth, I. (1999). Understanding coverbal dimensional gestures in a virtual design environment. *Proceedings IDS'99 - Workshop on Interactive Dialogue in Multi-Modal Systems*, ESCA (pp. 117-120).

[186] Wachsmuth, I. (1999). Mensch-Maschine-Kommunikation mit Gestik und Sprache. In: W.-D. Miethling & J. Perl (Eds.), *Sport und Informatik VI* (pp. 167-178). Köln: Sport und Buch Strauss.

[187] Wachsmuth, I. (1999). Communicative rhythm in gesture and speech. In A. Braffort et al. (Eds.), *Gesture-Based Communication in Human-Computer Interaction - Proceedings International Gesture Workshop* (pp. 277-289). Berlin: Springer-Verlag (LNAI 1739).

[188] Börner, K. & Wachsmuth, I. (1998). AkuVis: Exploring visual noise, HCI'98 Video Program. Abstract in *HCI'98 Conference Companion/Adjunct Proceedings of the 13th British Computer Society Annual Conference on Human Computer Interaction* (pp. 76-77), Sheffield.

[189] Börner, K., Fehr, R., & Wachsmuth, I. (1998). Audio-visual interaction with noise pollution data. In *Virtual Environments Conference - extended abstracts* (pp. 19_1-19_4), Stuttgart, Germany, June 16-18.

[190] Fehr, R., Börner, K., & Wachsmuth, I. (1998). AkuVis: Interactive visualization of acoustic data. *In Umweltinformatik '98: Vernetzte Strukturen in Informatik, Umwelt und Wirtschaft, Band 2,* (pp. 722-728). Marburg: Metropolis-Verlag.

[191] Fröhlich, M. & Wachsmuth, I. (1998). Gesture recognition of the upper limbs - From signal to symbol. In I. Wachsmuth & M. Fröhlich (Eds.), *Gesture and Sign Language in Human-Computer Interaction* (pp 173-184). Berlin: Springer (LNAI 1371).

[192] Jung, B., Hoffhenke, M., & Wachsmuth, I. (1998). Virtual assembly with construction kits. In: *Proceedings of the 1998 ASME Design for Engineering Technical Conferences* (DECT-DFM '98).

[193] Jung, B., Latoschik, M., & Wachsmuth, I. (1998). Knowledge-based assembly simulation for virtual prototype modeling. *IECON'98 - Proceedings of the 24th Annual Conference of the IEEE Industrial Electronics Society, Vol. 4*, IEEE, 2152-2157.

[194] Jung, B. & Wachsmuth, I. (1998). Integration of geometric and conceptual reasoning for interacting with virtual environments. *Proc. AAAI'98 Spring Symposium on Multimodal Reasoning*, 22-27.

[195] Latoschik, M., Fröhlich, M., Jung, B., & Wachsmuth, I. (1998). Utilize speech and gestures to realize natural interaction in a virtual environment. *IECON'98 - Proceedings of the 24th Annual Conference of the IEEE Industrial Electronics Society, Vol. 4*, IEEE, 2028-2033.

[196] Latoschik, M. & Wachsmuth, I. (1998). Exploiting distant pointing gestures for object selection in a virtual environment. In I. Wachsmuth & M. Fröhlich (Eds.), *Gesture and Sign Language in Human-Computer Interaction* (pp 185-196). Berlin: Springer (LNAI 1371).

[197] Wachsmuth (1998). Experten- und Agentensystemtechniken für intuitivere Benutzungs-schnittstellen. In J. Mester, J. Perl (Eds.), *Informatik im Sport: Bericht über das internationale Symposium 12.-14. Juni 1997 in Köln* (pp. 181-191). Köln: Sport und Buch Strauss.

[198] Lenzmann, B. & Wachsmuth, I. (1997). Contract-net-based learning in a user-adaptive interface agency. In G. Weiss (Ed.), *Distributed Artificial Intelligence Meets Machine Learning - Learning in Multi-Agent Environments* (pp. 202-222). Berlin: Springer (LNAI 1221).

[199] Wachsmuth, I., Lenzmann, B., Jörding, T., Jung, B., Latoschik, M., & Fröhlich, M. (1997). A virtual interface agent and its agency. *Proceedings of the First International Conference on Autonomous Agents,* Marina del Rey, 516-517.

[200] Zhang, J., Knoll, A., Jung, B., Wachsmuth, I., & Rickheit, G. (1997). Experiments of robotic assembly instructed by natural language. *Video Proceedings of the 1997 IEEE International Conference on Robotics and Automation (ICRA'97)*.

[201] Jörding, T. & Wachsmuth, I. (1996). An anthropomorphic agent for the use of spatial language, *Proceedings of ECAI'96 Workshop "Representation and Processing of Spatial Expressions"* (pp. 41-53), Budapest.

[202] Jung, B. & Wachsmuth, I. (1996). Ein wissensbasiertes System für die 3D-computergraphische Montage-Simulation. In D. Ruland (Ed.), *Verteilte und intelligente CAD-Systeme: Tagungsband CAD '96* (pp. 107-119). Bonn: Gesellschaft für Informatik; Kaiserslautern/Saarbrücken: DFKI. (Best Paper Award)

[203] Lenzmann, B. & Wachsmuth, I. (1996). A user-adaptive interface agency for interaction with a virtual environment. In G. Weiss & S. Sen (Eds.), *Adaption and Learning in Multi-Agent Systems* (pp. 140-151). Berlin: Springer (LNAI 1042).

[204] Lenzmann, B. & Wachsmuth, I. (1996). A negotiating interface agency for adaptation to users' preferences, *Working Notes, ECAI'96 Workshop "Learning in Distributed Artificial Intelligence Systems"* (pp. 70-79), Budapest.

[205] Lenzmann, B. & Wachsmuth, I. (1996). Eine multimodale Eingabearchitektur, Abstr. in M. Thielscher & S.-E.Bornscheuer (Eds.): *Fortschritte der Künstlichen Intelligenz/Workshops KI-96* (p. 93), Dresden University Press.

[206] Cao, Y., Jung, B., & Wachsmuth, I. (1995). Situated verbal interaction in virtual design and assembly, IJCAI-95 Videotape Program. Abstract in *Proc. Fourteenth International Joint Conference on Artificial Intelligence*, 2061-2062.

[207] Jörding, T., Lenzmann, B., & Wachsmuth I. (1995). Ein anthropomorpher Interface-Agent für die Interaktion mit einer virtuellen Umgebung. In *KI-95 Activities: Workshops, Posters, Demos* (pp. 182-183). Bonn: Ges. für Informatik. (Full paper: KI-NRW Report 95-02)

[208] Jung, B., Lenzmann, B, & Wachsmuth, I. (1995). Interaktive Montage-Simulation mit wissensba-sierter Grafik, *8. Workshop Simulation und Künstliche Intelligenz: Virtuelle Realität in der Simulation,* ASIM Mitteilungen Nr. 49 (G. Lux & U. Schroeder, Eds.).

[209] Jung, B. & Wachsmuth, I. (1995). Integrating spatial and conceptual knowledge in virtual assembly. In *KI-95 Activities: Workshops, Posters, Demos* (pp. 103-104). Bonn: Ges. für Informatik.

[210] Jung, B. & Wachsmuth, I. (1995). Situierte Informationsverarbeitung im CODY Virtuellen Konstrukteur. In *KI-95 Activities: Workshops, Posters, Demos* (pp. 332-334). Bonn: Ges. für Informatik.

[211] Lenzmann, B. & Wachsmuth, I. (1995). A user-adaptive interface agency for interaction with a virtual environment. *Working Notes IJCAI-95 Workshop on Adaptation and Learning in Multiagent Systems*, 43-46.

[212] Lenzmann, B., Wachsmuth, I., & Cao, Y. (1995). VIENA: An intelligent interface for a virtual environment. In *KI-95 Activities: Workshops, Posters, Demos* (pp. 335-337). Bonn: Ges. für Informatik. (Full Paper: KI-NRW Report 95-01)

[213] Schlegelmilch, S., Heller, B., Meyer-Fujara, J., & Wachsmuth, I. (1995). Koordination modular organisierter Wissensbasen. In *KI-95 Activities: Workshops, Posters, Demos* (pp. 338-340). Bonn: Ges. für Informatik.

[214] Wachsmuth, I. (Chapter Ed.) (1995). Expertensysteme, Planen und Problemlösen. In G. Görz (Ed.), *Einführung in die Künstliche Intelligenz, 2. Aufl.* (pp. 703-811). Bonn: Addison-Wesley.

[215] Wachsmuth. I., Lenzmann, B., & Cao, Y. (1995). VIENA: A multiagent interface to a virtual environment (Poster). *Proceedings First International Conference on Multi-Agent Systems (ICMAS-95)*, p. 465.

[216] Wachsmuth, I., Lenzmann, B., & Jung, B. (1995). Communicating with virtual environments - A survey of recent work at the University of Bielefeld. In D.W. Fellner (Ed.), *Modeling - Virtual Worlds - Distributed Graphics MVD '95* (pp. 93-97). Sankt Augustin: Infix.

[217] Heller, B., Meyer-Fujara, J., Schlegelmilch, S., & Wachsmuth, I. (1994). HYPERCON: Ein Konsultationssystem zur Hypertonie auf der Basis modular organisierter Wissensbestände. In G. Barth, A. Günter & B. Neumann (Eds.), *KI-94 Anwendungen der Künstlichen Intelligenz* (pp. 155-169). Berlin: Springer.

[218] Heller, B., Meyer-Fujara, J., Schlegelmilch, S., Wachsmuth, I., & Wetter, Th. (1994). Workshop: Modularisierung großer Wissensbasen (Einführung). In J. Kunze & H. Stoyan (Eds.), *KI-94 Workshops* (p. 321). Bonn: Ges. für Informatik.

[219] Meyer-Fujara, J., Heller, B., Schlegelmilch, S., & Wachsmuth, I. (1994). Knowledge-level modularization of a complex knowledge base. In B. Nebel & L. Dreschler-Fischer (Eds.), *KI-94: Advances in Artificial Intelligence* (pp. 214-225). Berlin: Springer (LNAI 861).

[220] Wachsmuth, I. (1994). The concept of intelligence in AI. *Proceedings of the Conf. "Prerational Intelligence - Phenomenology of Complexity Emerging in Systems of Agents Interacting Using Simple Rules"* (pp. 121-132). Bielefeld: Center for Interdisciplinary Research (ZiF).

[221] Wachsmuth, I. (1994). How useful are virtual worlds? In K. Duncan & K. Krueger (Eds.) *Proceedings of the IFIP 13th World Computer Congress, Vol. 3* (pp. 191-192). North-Holland: Elsevier.

[222] Wachsmuth, I. (1994). Zukunftsvisionen der KI - Wünschbare und realistische Wirkungen auf die Lebenswelt. In A.B. Cremers et al. (Eds.) *Künstliche Intelligenz - Leitvorstellungen und Verantwortbarkeit (Band 2: Tagungsbericht, pp.99-105)*. Düsseldorf: Verein Deutscher Ingenieure VDI.

[223] Wachsmuth, I. (1994). Systeme von Interface-Agenten als Mittler in der Mensch-Maschine-Kommunikation (extendend abstract for invited presentation). In J. Kunze & H. Stoyan (Eds.), *KI-94 Workshops* (pp. 3-4). Bonn: Ges. für Informatik.

[224] Antoniou, G. & Wachsmuth, I. (1993). Structuring and modules for knowledge bases: Motivation for a new model. *Proceedings East-West Conference on Artificial Intelligence (pp. 73-77)*, Moscow 1993.

[225] Cao, Y., Lenzmann, B., Siekmann, N., & Wachsmuth, I. (1993). Wissensbasierte Agenten zur Raumkonfiguration in einer virtuellen Umgebung. *Proceedings KI-93 Workshop Hybride und Integrierte Ansätze zur Raumrepräsentation und ihre Anwendung (Berlin, Sep. 1993)*. München: TU.

[226] Cao, Y. & Wachsmuth, I. (1993). Situated space agent for 3D graphics design. Extended Abstract in *Virtual Reality Vienna 1993, the Global VR-Focus in Europe - Abstracts (pp. 8-9)*. Full Paper: KI-NRW (Applications of Artificial Intelligence in North-Rhine Westphalia) Report 93-13.

[227] Kirsch, B., Wachsmuth, I., & Schnepf, U. (1993). Robots and simulated environments – first steps towards virtual robotics. *Proceedings IEEE 93 Symposium on Research Frontiers in Virtual Reality* (Oct. 25-26, San Jose CA) (pp. 122-124). Los Alamos, CA: IEEE Computer Society Press.

[228] Gängler, B., Greten, M., Linke, T., & Wachsmuth, I. (1992). *Assoziative Zuordnung und Suche von Wissen in einer thematisch strukturierten Wissensbasis* (Papier auf der Tagung der DGfS-Sektion Computerlinguistik, Osnabrück 1991). MOSYS Report 11, Technische Fakultät, Universität Bielefeld, 1992.

[229] Wachsmuth, I. (1992). Wissensrepräsentation und kognitive Modelle (extended abstract of invited presentation). In R. Studer (Ed.), *Informationssysteme und Künstliche Intelligenz: Modellierung.* Berlin: Springer Verlag (IFB 303), 1992. (Full paper: MOSYS Report 8, Technische Fakultät, Universität Bielefeld)

[230] Wachsmuth, I. & Meyer-Fujara, J. (1992). Wissensbasierte Informationsverarbeitung mit Expertensystemen: Wissen - Fachwissen - Erfahrungswissen. In H. Meulemann & A. Elting-Camus (Eds.), *Tagungsband 26. Deutscher Soziologentag* (pp. 571-573), Düsseldorf.

[231] Wachsmuth, I. & Meyer-Fujara, J. (1990). Addressing the retrieval problem in large knowledge bases. *Proc. Computational Intelligence 90*, Mailand 1990 (extended abstract). Full paper: MOSYS-Report 3, Bielefeld: Universität Bielefeld, 1990.

[232] Wachsmuth, I. (1989). Kognitive Kategorien. *Proc. 13th German Workshop on Artificial Intelligence* (pp. 482-483). Berlin: Springer.

[233] Rollinger, C.-R., Studer, R., & Wachsmuth, I. (1987). The concept of reference objects in the representation of natural language information in L-LILOG. *Proceedings of the Expert Systems ITL Conference.* San Jose (CA): IBM Almaden Research Lab.

[234] Rollinger, C.-R., Studer, R., Uszkoreit, H., & Wachsmuth, I. (1987). Textunderstanding in LILOG - Sorts and reference objects. In W. Brauer & W. Wahlster (Eds.), *Wissensbasierte Systeme - Proceedings 2. Internationaler GI-Kongreß* (pp. 246-259). Berlin Heidelberg: Springer.

[235] Wachsmuth, I. & Becker, J.P. (1986). The role of technology in the cognitive development of mathematics learners. In J. Mohyla (Ed.), *The Role of Technology. Report from the Fifth International Congress of Mathematical Education*. Adelaide.

[236] Post, T.R., Behr, M.J., Lesh, R., & Wachsmuth, I. (1985). Selected results from the Rational Number Project. *Proceedings of the Ninth International Conference for the Psychology of Mathematics Education* (pp. 342-351). Utrecht.

[237] Wachsmuth, I. (1985). Inconsistent student performance in applicational situations of mathematics. *Proceedings of the Ninth Int. Conference for the Psychology of Mathematics Education* (pp. 362-368). Utrecht.

[238] Wachsmuth, I. (1985). Computersimulationen zur Erklärung instabilen Verhaltens von Schulkindern in mathematischen Anwendungssituationen. *Beiträge zum Mathematikunterricht 1985* (pp.342-345). Bad Salzdetfurth: Franzbecker.

[239] Wachsmuth, I. (1985). *Logical Analysis of Cognitive Organizational Structures: The LAKOS Project (Part A). A Computer Model of Student Performance (Part B)*. Paper at the Annual Meeting of the American Educational Research Assoc., Chicago, April 1985. ERIC Document No. ED 257635.

[240] Behr, M.J., Post, T.R., & Wachsmuth, I. (1984). *Understanding rational numbers - The unit concept.* Paper presented at the 8th Internat. Conference for the Psychology of Mathematics Education. Sydney, August 1984.

[241] Behr, M., Wachsmuth, I., & Post, T. (1984). Tasks to assess children's perception of the size of a fraction. In A. Bell, B. Low & J. Kilpatrick (Eds.), Theory, Research and Practice in Mathematical Education (pp. 179-18#) (Fifth International Congress on Mathematical Education, South Australia). Nottingham, UK: Shell Centre for Mathematics Education.

[242] Wachsmuth, I. (1984). Entwicklung des Bruchzahlverständnisses bei Kindern - Bericht über ein klinisches Unterrichtsexperiment in den USA 1982-83. *Beiträge zum Mathematikunterricht 1984* (pp. 368-371). Bad Salzdetfurth: Franzbecker.

[243] Wachsmuth, I. (1984). An analysis into structures and mechanisms of 5th grade children's mathematical knowledge. *Proceedings of the Eighth International Conference for the Psychology of Mathematics Education* (pp. 251-257), Sydney.

[244] Wachsmuth, I. (1984). Fehlererkennende Registermaschinen in Codd's Zellularraum. In R. Vollmar & U. Golze (Eds.), *Beiträge zur Theorie der Polyautomaten - Dritte Folge* (pp. 152-176). Informatik-Skripten 8, TU Braunschweig.

[245] Wachsmuth, I. (1984). *The role of artificial intelligence research and technology for the learning of mathematics.* Paper presented at the Fifth International Congress on Mathematical Education (ICME 5), Adelaide, August 1984.

[246] Behr, M.J., Wachsmuth, I., & Post, T.R. (1983). On children's quantitative concept of rational number: Construct and estimate the sum. *Proc. 5th Annual Meeting of the North American Chapter of the Internat'l Group for the Psychology of Mathematics Education, Vol. 2* (pp. 272-279), Montreal.

[247] Wachsmuth, I., Behr, M.J., & Post, T.R. (1983). Children's perception of ratios and fractions in Grade 5. *Proceedings of the Seventh International Conference for the Psychology of Mathematics Education* (pp. 164-169). Rehovot: Weizmann Institute of Science.

[248] Wachsmuth, I., Behr, M.J., Post, T.R. (1983, April). *Children's quantitative notion of rational number.* Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada. ERIC Document No. ED 229218.

[249] Behr, M.J., Bright, G.W., & Wachsmuth, I. (1982). Numberline representations of fractions. *Proceedings of the Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 106-112), Athens (GA).

[250] Behr, M.J. & Wachsmuth, I. (1982). Turning the plates - Size perception of rational numbers among 9- and 10-year old children. *Proceedings of the Sixth International Conference for the Psychology of Mathematics Education* (pp. 181-186), Antwerp, Belgium.

[251] Wachsmuth, I. (1982). Questions on some issues in the psychology of mathematics instruction. *Proceedings of the Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 43-49), Athens (GA).

[252] Wachsmuth, I. (1981). What kind of organization makes structural knowledge easily processible? *Proceedings of the Fifth Int. Conference for the Psychology of Mathematics Education* (pp. 243-248),

Grenoble, France.

[253] Wachsmuth, I. (1981). Zwei Modi der Denktätigkeit – auch beim Mathematik-Lernen? (Zusammenfassung). *Beiträge zum Mathematik-Unterricht*, Hannover 1981. Langfassung: Osnabrücker Schriften zur Mathematik, Reihe P, Heft 29.

[254] Wachsmuth, I. (1980). Netze mit zeitvarianten Komponentenverzögerungen (Zusammenfassung). In R. Wilhelm (Ed.), *GI - 10. Jahrestagung* (Informatik-Fachberichte Nr. 33). Berlin: Springer.

[255] Wachsmuth, I. (1979). Lokális-szinkron sejtterek. In T. Legendi (Ed.), *Párhuzamos Számítási Rendszerek* 79/3 (pp. 129-139), Szeged, Hungary.

[256] Wachsmuth, I. (1977). Lokal-synchrone Zellularräume. In U. Golze & R. Vollmar (Eds.), *Beiträge zur Theorie der Polyautomaten* (pp. 106 - 116). TU Braunschweig: Informatik-Berichte Nr. 7703.

D. REVIEW ARTICLES, POSITION PAPERS, REPORTS (selected)

[257] Wachsmuth (1998). Das aktuelle Schlagwort: Virtuelle Realität. *Künstliche Intelligenz 98*/1, 34.

[258] Wachsmuth, I., Heller, B., Meyer-Fujara, J., & Schlegelmilch, S. (1995). HYPERCON: Modulare Wissensbasen für Hypertonie-Konsultation – Abschlußbericht. MOSYS Report 23, Technische Fakultät, Universität Bielefeld.

[259] Jung, B. & Wachsmuth, I. (1994). *Dynamische Konzeptualisierung*. SFB 360 Report 94/9, Universität Bielefeld.

[260] Wachsmuth, I., Lenzmann, B., Siekmann, N., & Cao, Y. (1994). Systeme von Interface-Agenten als Mittler in der Mensch-Maschine-Kommunikation. KI-NRW (Applications of Artificial Intelligence in North-Rhine-Westphalia) Report 94-16.

[261] Kirsch, B., Schnepf, U., & Wachsmuth, I. (1993). RoboVis – A Scenario for Using Virtual reality Techniques in Learning Robot Development. GMD Sankt Augustin: VISWIZ Report 4/1993.

[262] Wachsmuth, I., Heller, B., & Meyer-Fujara, J. (1992). HYPERCON: Modulare Wissensbasen für Hypertonie-Konsultation. MOSYS Report 10, Technische Fakultät, Universität Bielefeld.

[263] Wachsmuth, I. (1989). *Modularisierung wissensbasierter Systeme* (Rahmenentwurf für ein Forschungsprogr. im Bereich Wissensbasierte Systeme/Künstliche Intelligenz). MOSYS Report 1, Universität Bielefeld.

[264] Wachsmuth, I. (1987). *On structuring domain-specific knowledge*. LILOG-Report 12, IBM Deutschland, März 1987.

[265] Wachsmuth, I. (1985). Bericht von der 1985er PME-Tagung. *Zentralblatt für Didaktik der Mathematik 86* (2).

[266] Behr, M., Bernard, J., Briars, D., Bright, G., Threadgill-Sowder, J., & Wachsmuth, I. (1984). Research problems in mathematics educations. *For the Learning of Mathematics, 4* (3), 22-23.

[267] Wachsmuth, I. (1983). Bericht von der 1983er Tagung der American Educational Research Association. *Zentralblatt für Didaktik der Mathematik 83* (5), 265-267.

[268] Wachsmuth, I. (1982). Letter to the Editor. *Journal of Mathematical Behavior, 3* (2), 188-192.

[269] Wachsmuth, I. (1981). Steps toward a long-term strategy of mathematical instruction. *Osnabrücker Schriften zur Mathematik*, Reihe P, Heft 37.

E. THESES

[270] Wachsmuth, I. (1989). *Zur intelligenten Organisation von Wissensbeständen in künstlichen Systemen* (Habilitationsschrift). Stuttgart/Heidelberg: IBM Deutschland Scientific Centre (IWBS Report 91).

[271] Wachsmuth, I. (1980). *Simultane zellulare Kalküle und lokal-synchrone Zellularautomaten* (Dissertation). Universität Hannover.