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Curriculum vitae

Table of Contents

Earned Degrees

Dr. phil. habil.	Philosophy, Technische Hochschule Dresden, 2003
Dr.	Philosophy, Ludwig-Maximilians Universität, München, 1993
M.A.	Philosophy, Ludwig-Maximilians Universität, München, 1990. Minors: Old Testament and Political Sciences

Employment

2020, Aug – present	Full Professor for Philosophy, School of Public Policy, Georgia Institute of Technology, Atlanta, GA
2004, Aug – 2020, Aug	Associate Professor for Philosophy, School of Public Policy, Georgia Institute of Technology
2013, Aug – 2014, Jul	Interim Chair (Director), School of Public Policy, Georgia Institute of Technology,
2004, Feb – Jul	Post-doc fellow, Faculty of Education, University of Victoria, BC, Canada
2003, Jun – 2004, Jan	Research Scientist, Institut für Didaktik der Mathematik (IDM, a research institute for mathematics education), Universität Bielefeld
1997, May – 2003, May	Assistant Professor (C1), IDM, Universität Bielefeld
1996, Oct – 1997, May	Research Scientist, IDM, Universität Bielefeld
1995, Jun – 1996, Oct	Research Scientist, IDM, DFG Projektstelle, Universität Bielefeld
1994, Jan – 1995, Jun	Research Scientist, IDM, Universität Bielefeld
1992, Jun – 1993, Dec	Research Scientist, Institut für Philosophie, Universität Essen
1983 – 1984	Research Assistant, Forschungsinstitut für Friedenspolitik, Starnberg

Publications

A. Published books, book chapters, and edited volumes

A1. Books

Hoffmann, M. H. G. (2005). *Erkenntnisentwicklung. Ein semiotisch-pragmatischer Ansatz [Knowledge development. A semiotic and pragmatic approach]*. Frankfurt am Main: Klostermann.

Hoffmann, M. H. G. (1996). *Die Entstehung von Ordnung. Zur Bestimmung von Sein, Erkennen und Handeln in der späteren Philosophie Platons [Genesis of Order. Ontology, Epistemology, and Political Action in Late Plato]*. Stuttgart und Leipzig: B.G. Teubner.

A2. Edited Volumes

Hoffmann, M. H. G., Lenhard, J., & Seeger, F. (Eds.). (2005). *Activity and Sign - Grounding Mathematics Education.* New York: Springer.

Hoffmann, M. H. G. (Ed.). (2003). *Mathematik verstehen – Semiotische Perspektiven [Understanding Mathematics – Semiotic Perspectives]*. Hildesheim: Franzbecker.

B. Refereed publications and submitted articles

B1. Journal Articles

Hoffmann, M. H. G. (2021). Reflective Consensus Building on the Nation's Largest Confederate Memorial. A Case Study. *Social Science Quarterly*, 102(3), 1111-1127. http://dx.doi.org/10.1111/ssqu.12970.

Hoffmann, M. H. G. (2020). Reflective Consensus Building on Wicked Problems with the Reflect! platform. *Science and Engineering Ethics*, 26, 793–819. https://doi.org/10.1007/s11948-019-00132-0.

Hoffmann, M. H. G. (2019). Consensus building and its epistemic conditions. *TOPOI*, First Online. doi:10.1007/s11245-019-09640-x.

Hoffmann, M. H. G. (2019). Transcendental arguments in scientific reasoning. *Erkenntnis*, 84(6), 1387-1407. doi: 10.1007/s10670-018-0013-9

Hoffmann, M. H. G. (2018). The elusive notion of "argument quality". *Argumentation, 32*(2), 213–240. doi:10.1007/s10503-017-9442-x

Hoffmann, M. H. G. (2018). Stimulating reflection and self-correcting reasoning through argument mapping: Three approaches (online first 2016). *Topoi. An International Review of Philosophy, 37*(1), 185-199. doi: 10.1007/s11245-016-9408-x

Hoffmann, M. H. G. (2016). Reflective Argumentation: A Cognitive Function of Arguing. *Argumentation*, 30(4), 365-397. doi: 10.1007/s10503-015-9388-9

Hoffmann, M. H. G., & Lingle, J. (2015). Facilitating Problem-Based Learning by Means of Collaborative Argument Visualization Software. *Teaching Philosophy*, 38(4), 371-398. doi:10.5840/teachphil2015112039

Hoffmann, M. H. G. (2015). Changing Philosophy through Technology: Complexity and Computer-Supported Collaborative Argument Mapping. *Philosophy & Technology, 28*(2), 167-188. doi:

10.1007/s13347-013-0143-6

Hoffmann, M. H. G., & Borenstein, J. (2014). Understanding Ill-Structured Engineering Ethics Problems Through a Collaborative Learning and Argument Visualization Approach. *Science and Engineering Ethics, 20*(1), 261-276. doi: 10.1007/s11948-013-9430-y

Hoffmann, M. H. G. (2010). "Theoric Transformations" and a New Classification of Abductive Inferences. *Transactions of the Charles S Peirce Society*, 46(4), 570-590.

Hoffmann, M. H. G., & Roth, W.-M. (2007). The complementarity of a representational and an epistemological function of signs in scientific activity. *Semiotica*, 164(1/4 [April]), 101-121.

Hoffmann, M. H. G. (2005). Limits of truth: Exploring epistemological approaches to argumentation. *Informal Logic*, 25(3), 245-260.

Hoffmann, M. H. G. (2005). Logical argument mapping: A method for overcoming cognitive problems of conflict management. *International Journal of Conflict Management***,** *16*(4), 304-334. (Published 12/2006)

Bakker, A., & Hoffmann, M. H. G. (2005). Diagrammatic Reasoning as the Basis for Developing Concepts: A Semiotic Analysis of Students' Learning about Statistical Distribution. *Educational Studies in Mathematics, 60*(3), 333–358.

Hoffmann, M. H. G. (2004). How to Get It. Diagrammatic Reasoning as a Tool of Knowledge Development and its Pragmatic Dimension. *Foundations of Science, 9*(3), 285-305.

Hoffmann, M. H. G. (2004). Axiomatisierung zwischen Platon und Aristoteles [Axiomatic between Plato and Aristotle]. *Zeitschrift für philosophische Forschung, 58*(2), 224-245.

Hoffmann, M. H. G. (2002). Das Problem der Erkenntnisentwicklung und Peirces semiotisch-pragmatischer Lösungsansatz [The Problem of Knowledge Development. A Semiotic and Pragmatic Approach]. *Allgemeine Zeitschrift für Philosophie, 27*(3), 223-240.

Hoffmann, M. H. G. (2001). Skizze einer semiotischen Theorie des Lernens [Outline of a Semiotic Theory of Learning]. *Journal für Mathematik-Didaktik, 22*(3/4), 231-251.

Hoffmann, M. H. G. (1999). Problems with Peirce's Concept of Abduction. *Foundations of Science, 4*(3), 271–305.

B2. Conference Presentation with Proceedings (Refereed)

Hoffmann, M. H. G. (2018). Fostering reflection and self-correcting reasoning with deliberation and argument visualization systems. In S. Oswald & D. Maillat (Eds.), Argumentation and Inference: Proceedings of the 2nd European Conference on Argumentation, Fribourg 2017 (Vol. 1, pp. 231-253). London: College Publications.

Hoffmann, M. H. G. (2016). Collaborative and adversarial reframing: How to use argument mapping to cope with "wicked problems" and intractable conflicts. In D. Mohammed & M. Lewiński (Eds.), *Argumentation and Reasoned Action: Proceedings of the First European Conference on Argumentation*, Lisbon, 9-12 June 2015 (Vol. 1, pp. 187-215). London: College Publications.

Eppler, M. J., Hoffmann, M. H. G., & Kernbach, S. (2015). Navicons for Collaboration - Navigating and Augmenting Discussions through Visual Annotations. *Information Visualisation (iV), 2015 19th International Conference on* (pp. 386-391). Retrieved from http://ieeexplore.ieee.org/xpls/icp.jsp?arnumber=7272631 . doi: 10.1109/iV.2015.73.

Hoffmann, M. H. G. (2013). Collaborative, problem-based learning with the argument-visualization

software “AGORA-net”. In A. L. Sellami (Ed.), 4th International Conference on Argumentation, Rhetoric, Debate, and the Pedagogy of Empowerment (pp. 179-197). Doha, Qatar: QatarDebate Center. Retrieved from http://www.qatardebate.org/international-events/fouth-icard2013/conference_proceedings.

Hoffmann, M. H. G. (2011). Powerful Arguments: Logical Argument Mapping. In F. H. v. Eemeren, B. Garssen, D. Godden & G. Mitchell (Eds.), *Proceedings of the 7th ISSA Conference, International Society for the Study of Argumentation*. Amsterdam, NL: CD-ROM. Available at: http://works.bepress.com/michael_hoffmann/34.

Hoffmann, M. H. G. (2010). Diagrams as Scaffolds for Creativity. *AAAI Workshops, North America*. Retrieved from http://aaai.org/ocs/index.php/WS/AAAIW10/paper/view/2027. *Visual Representations and Reasoning. A workshop of the 24th AAAI Conference on Artificial Intelligence (AAAI-10)*, Atlanta, July 11, 2010.

Hoffmann, M. H. G. (2008). Analyzing Framing Processes by Means of Logical Argument Mapping. Intl. Association for Conflict Management, IACM 20TH Annual Conference Paper 2008, Available at *SSRN*: http://ssrn.com/abstract=1298520.

Hoffmann, M. H. G. (2008). Requirements for reflective argument visualization tools: a case for using validity as a normative standard. In P. Besnard, S. Doutre & A. Hunter (Eds.), *Computational Models of Argument. Proceedings of COMMA 2008* (pp. 196-203). Amsterdam: IOS.

Hoffmann, M. H. G. (2007). Power and Limits of Dynamical Systems Theory in Conflict Analysis. *IACM 2007 Meetings Paper Available at SSRN:* http://ssrn.com/abstract=758345.

Hoffmann, M. H. G. (2007). Logical Argument Mapping: A cognitive-change-based method for building common ground. In S. Buckingham Shum, M. Lind & H. Weigand (Eds.), *ICPW '07 2nd international conference on Pragmatic web*. ACM International Conference Proceeding Series (Vol. 280, pp. 41-47). Tilbourg, NL. Retrieved from http://dl.acm.org/citation.cfm?doid=1324237.1324242. doi: http://doi.acm.org/10.1145/1324237.1324242.

Hoffmann, M. H. G. (2005). Charles Peirce: Formen kreativer Tätigkeit in der Mathematik [Charles Peirce: Forms of creative activity in mathematics]. In G. Abel (Ed.), *Kreativität. Sektionsbeiträge des XX. Deutschen Kongresses für Philosophie*, Berlin September 2005 (Vol. 1, pp. 423-433). Berlin: Universitätsverlag der TU Berlin.

Hoffmann, M. H. G. (2005). Problems of Understanding in Conflicts and a Semiotic Solution. *Social Sciences Research Network. SSRN eLibrary*, http://ssrn.com/abstract=758345, IACM 18th Annual Conference 2005.

B3. Other refereed material

Hoffmann, M. H. G. (2018). Argument Mapping. *Oxford Bibliographies in Philosophy*. Ed. by Duncan Pritchard. New York: Oxford University Press. Retrieved from www.oxfordbibliographies.com. Doi:10.1093/OBO/9780195396577-0364

Hoffmann, M. H. G. (2011). Visualizing Webs of Beliefs, Values, and Attitudes for Cross-Cultural Understanding. Paper presented at the Global Dialogue Conference 2009: Responsibility -- *Climate Change as Challenge for Intercultural Inquiry on Values*, Aarhus University, Aarhus, Denmark.

C. Other publications and creative products

C1. Invited book Chapters (Editor reviewed)

Hoffmann, M. H. G. (2016). Commentary on Leite, Martins and Eğilmez's Towards an Online Social Debating System. In D. Mohammed & M. Lewiński (Eds.), *Argumentation and Reasoned Action: Proceedings of the First European Conference on Argumentation*, Lisbon, 9-12 June 2015 (Vol. 1, pp. 399-401). London: College Publications.

Hoffmann, M. H. G. (2015). Argument Mapping Software: Semiotic Foundations. In M. Peters (Ed.), *Encyclopedia of Educational Philosophy and Theory* (pp. 1-6): Springer Singapore. Retrieved from http://dx.doi.org/10.1007/978-981-287-532-7_27-1.

Hoffmann, M. H. G. (2014). Chapter 13. In F. Bellucci, A.-V. Pietarinen & F. Stjernfelt (Eds.), *Peirce. 5 Questions* (pp. 105-118). USA / UK: Automatic Press.

Hoffmann, M. H. G. (2013). Cogniçâ e Pensamento Diagramático. In J. Queiroz & L. d. Moraes (Eds.), *A Lógica de Diagramas de Charles Sanders Peirce: Implicações em Ciência Cognitiva, Lógica e Semiótica* (pp. 105-137). Juiz de Fora: Editora da Universidade Federal de Juiz de Fora. (Portuguese Translation of "Cognitive conditions of diagrammatic reasoning." *Semiotica*, 186(1/4), 189-212).

Hoffmann, M. H. G. (2011). Analyzing Framing Processes in Conflicts and Communication By Means Of Logical Argument Mapping. In W.A.. Donohue, R.G. Rogan & S. Kaufman (Eds.), *Framing Matters: Perspectives on Negotiation Research and Practice in Communication* (pp. 136-164). New York, NY: Peter Lang.

Hoffmann, M. H. G., & Roth, W.-M. (2010). Four Functions of Signs in Learning and Interdisciplinary Collaboration. In I. Semetsky (Ed.), *Semiotics - Education - Experience* (pp. 131-150). Rotterdam, NL: Sense Publishers.

Roth, W.-M., & Hoffmann, M. H. G. (2010). Signs in/of Communication. In I. Semetsky (Ed.), *Semiotics - Education - Experience* (pp. 151-174). Rotterdam, NL: Sense Publishers.

Hoffmann, M. H. G. (2007, Sept.). Seeing problems, seeing solutions. Abduction and diagrammatic reasoning in a theory of scientific discovery. In O. Pombo & A. Gerner (Eds.), *Abduction and the Process of Scientific Discovery* (pp. 213 - 236). Lisboa: CFCUL/Publidisa.

Hoffmann, M. H. G. (2006). Axiomatisierung zwischen Platon und Aristoteles [Axiomatic between Plato and Aristotle]. In G. Schiemann, D. Mersch & G. Böhme (Eds.), *Platon im nachmetaphysischen Zeitalter* (enlarged version of the article published in *Zeitschrift für philosophische Forschung* in 2004), pp. 111-135). Frankfurt am Main: Wissenschaftliche Buchgesellschaft.

Hoffmann, M. H. G. (2005). Signs as means for discoveries. Peirce and his concepts of "Diagrammatic Reasoning," "Theorematic Deduction," "Hypostatic Abstraction," and "Theoric Transformation". In M. H. G. Hoffmann, J. Lenhard & F. Seeger (Eds.), *Activity and Sign - Grounding Mathematics Education* (pp. 45-56). New York: Springer.

Hoffmann, M. H. G., Lenhard, J., & Seeger, F. (2005). Grounding mathematics education. Michael Otte's contribution. In M. H. G. Hoffmann, J. Lenhard & F. Seeger (Eds.), *Activity and Sign - Grounding Mathematics Education* (pp. 1-7). New York: Springer.

Hoffmann, M. H. G. (2004). Zur Einheit mathematischen Wissens. Von Platon zu Gödel [Unity of Mathematical Knowledge. From Plato to Gödel]. In J.-M. Narbonne & A. Reckermann (Eds.), *Pensées de l' "Un" dans l'histoire de la philosophie. Études en hommage au professeur Werner*

Beierwaltes (pp. 550-571). Paris / Québec: Vrin / Les Presses de l'Université Laval.

Hoffmann, M. H. G. (2003). Semiotik als Analyse-Instrument [Semiotics as a Tool of Analysis]. In M. H. G. Hoffmann (Ed.), *Mathematik verstehen – Semiotische Perspektiven* (pp. 34-77). Hildesheim: Franzbecker.

Hoffmann, M. H. G. (2003). Einleitung: Warum Semiotik? [Introduction: Why Semiotics?]. In M. H. G. Hoffmann (Ed.), *Mathematik verstehen – Semiotische Perspektiven* (pp. 1-18). Hildesheim: Franzbecker.

Hoffmann, M. H. G. (2003). Lernende lernen abduktiv: eine Methodologie kreativen Denkens [Learners Learn by Abduction. A Methodology of Creative Thinking]. In H.-G. Ziebertz, S. Heil & A. Prokopf (Eds.), *Abduktive Korrelation. Religionspädagogische Konzeption, Methodologie und Professionalität im interdisziplinären Dialog* (pp. 125-136). Münster: LIT Verlag.

Hoffmann, M. H. G. (2003). Peirce's "Diagrammatic Reasoning" as a Solution of the Learning Paradox. In G. Debrock (Ed.), *Process Pragmatism: Essays on a Quiet Philosophical Revolution* (pp. 121-143). Amsterdam: Rodopi.

Hoffmann, M. H. G. (2001). Was sind "Symbole", und wie läßt sich ihre Bedeutung erfassen? [What Are Symbols and How to Grasp Their Meaning?]. In G. Melville (Ed.), *Institutionalität und Symbolisierung. Verstetigungen kultureller Ordnungsmuster in Vergangenheit und Gegenwart* (pp. 95–117). Köln Böhlau.

Hoffmann, M. H. G. (2001). Die synthetisch-pragmatische Mathematikauffassung im Gegensatz zur analytischen – ein Blick auf die Geschichte der Philosophie der Mathematik [Contrasting a Synthetic-Pragmatical View of Mathematics and an Analytical One. A Historical Approach to Philosophy of Mathematics]. In K. Lengnink, S. Prediger & F. Siebel (Eds.), *Mathematik und Mensch. Sichtweisen der Allgemeinen Mathematik* (pp. 127-140). Mühltal: Verlag Allgemeine Wissenschaft.

Hoffmann, M. H. G. (1996). Das Problem der Zukunft im Rahmen holistischer Ethiken. Im Ausgang von Platon und Peirce [The Problem of Future in Holistic Ethics]. In H. W. Ingensiep & R. Hoppe-Sailer (Eds.), *NaturStücke. Zur Kulturgeschichte der Natur* (pp. 17–41). Ostfildern: edition tertium.

C2. Editor of special issues of Journals (not refereed)

Hoffmann, M. H. G., Schmidt, J. C., & Nersessian, N. (2013). Philosophy of and as Interdisciplinarity. *Synthese*, 190(11). doi: DOI 10.1007/s11229-012-0214-8

Hoffmann, M. H. G. (Ed.). (2006). Semiotik in der Mathematikdidaktik. Lernen anhand von Zeichen und Repräsentationen [Semiotics in mathematics education. Learning by means of signs and representations]. *Journal für Mathematik-Didaktik 27*(3/4).

Hoffmann, M. H. G. (Ed.). (2000). Lernen als Zeichenprozess [Learning as Semiosis]: *Zeitschrift für Semiotik 22*(1).

von Perger, M., & Hoffmann, M. H. G. (Eds.). (1994). *LESARTEN. Zeitschrift für Interpretation [Ways of Reading. Journal for Interpretation] (Vol. 2)*.

C3. Invited journal Articles (Editor reviewed)

Hoffmann, M. H. G. (2018). "... and therefore in a Remote Sense Abduction Rests upon Diagrammatic Reasoning". *EURASIA Journal of Mathematics, Science and Technology Education*, 14(9), 1-14. doi: https://doi.org/10.29333/ejmste/92553.

Hoffmann, M. H. G. (2014). What is “Science”? For What Do We Need a “Polyocular Framework”? Open peer commentary on the article “Second-Order Science of Interdisciplinary Research: A Polyocular Framework for Wicked Problems” by Hugo F. Alrøe & Egon Noe. *Constructivist Foundations, 10*(1), 83–84.

Hoffmann, M. H. G., Schmidt, J. C., & Nersessian, N. (2013). Philosophy of and as Interdisciplinarity (Introduction to a special issue). *Synthese*, 190(11), 1857-1864. doi: DOI 10.1007/s11229-012-0214-8

Hoffmann, M. H. G. (2011). Cognitive conditions of diagrammatic reasoning. *Semiotica*, 186(1/4), 189-212.

Hoffmann, M. H. G., & Schmidt, J. C. (2011). Philosophy of (and as) Interdisciplinarity. Workshop Report (Atlanta, 28-29 September 2009). *Journal for General Philosophy of Science*, 42(1), 169-175.

Hoffmann, M. H. G. (2011). Climate Ethics: Structuring Deliberation by means of Logical Argument Mapping. *Journal of Speculative Philosophy*, 25(1), 64-97.

Hoffmann, M. H. G. (2009). Über die Bedingungen der Möglichkeit durch diagrammatisches Denken etwas zu lernen: Diagrammgebrauch in Logik und Arithmetik. *Zeitschrift für Semiotik,* 31(3-4), 241-274.

Hoffmann, M. H. G. (2007, July). Learning Without Belief-Change? *Cultural Studies of Science Education, 2*(3), 688-694.

Hoffmann, M. H. G. (2007, May). Learning from People, Things, and Signs. *Studies in Philosophy and Education, 26*(3), 185-204.

Hoffmann, M. H. G. (2006). Einleitung: Semiotik in der Mathematikdidaktik. Lernen anhand von Zeichen und Repräsentationen ,[Introduction: Semiotics in mathematics education. Learning by means of signs and representations]. *Journal für Mathematik-Didaktik*.

Hoffmann, M. H. G. (2006). What is a “semiotic perspective,” and what could it be? Some comments on the contributions of this Special Issue. *Educational Studies in Mathematics, 61*, 279–291.

Hoffmann, M. H. G., & Roth, W.-M. (2005). What you should know to survive in knowledge societies. On a semiotic understanding of 'knowledge'. *Semiotica, 157*(1/4), 105-142.

Hoffmann, M. H. G., & Roth, W.-M. (2004). Learning by Developing Knowledge Networks. A semiotic approach within a dialectical framework. *ZDM. Zentralblatt für Didaktik der Mathematik, 36*(6), 196-205.

Hoffmann, M. H. G. (2004). Peirces Philosophie der Wissenschaft, Logik und Erkenntnistheorie. Neuere Publikationen und Editionen [Peirce’s Philosophy of Science, Logic and Epistemology. New publications and editions]. 1. Teil. *Philosophische Rundschau, 51*(3), 193-212.

Hoffmann, M. H. G. (2004). Peirces Philosophie der Wissenschaft, Logik und Erkenntnistheorie. Neuere Publikationen und Editionen. 2. Teil. *Philosophische Rundschau, 51*(4), 296-313.

Hoffmann, M. H. G. (2001). Geist und Welt - durch die Symbolisierungen der Kunst betrachtet [Mind and World – Considered through Symbolization of Art]. Rezension von: Rolf Lachmann, Susanne K. Langer. Die lebendige Form menschlichen Fühlens und Verstehens. München 2000: Fink. *IASL online, http://iasl.uni-muenchen.de/rezensio/liste/hoffmann.html*.

Hoffmann, M. H. G. (2000). Die Paradoxie des Lernens und ein semiotischer Ansatz zu ihrer Auflösung [A Semiotic Approach at the Paradox of Learning]. *Zeitschrift für Semiotik, 22*(1), 31–50.

Hoffmann, M. H. G. (2000). Einleitung. Lernen als Zeichenprozess [Introduction to a Special Issue on Learning as Semiosis]. *Zeitschrift für Semiotik, 22*(1), 3–10.

Hoffmann, M. H. G., & Plöger, M. (2000). Mathematik als Prozess der Verallgemeinerung von Zeichen: Eine exemplarische Unterrichtseinheit zur Entdeckung der Inkommensurabilität [Mathematics as a Process of Generalizing Signs. Three Classroom Sections on the Discovery of Incommensurability]. *Zeitschrift für Semiotik, 22*(1), 81–114.

Hoffmann, M. H. G. (1998). Verzicht auf Wahrheit, Existenz von Tatsachen und die Frage nach der "Radikalität" der "Radikal-Konstruktivistischen Wissenstheorie" [Neglecting Truth and Existence of Facts. How “radical” is “radical constructivism”?]. *Ethik und Sozialwissenschaften, 9* (4), 533–535.

Hoffmann, M. H. G. (1998). ¿Hay una "Lógica" de la Abductión? [Is there a “Logic” of Abduction?] *Analogía Filosófica (Mexico), 12*(1), 41–55.

von Perger, M., & Hoffmann, M. H. G. (1997). Ideen, Wissen und Wahrheit nach Platon. Neuere Monographien [Forms, Knowledge, and Truth according to Plato. New Monographs]. *Philosophische Rundschau*, 44, 113–151.

Hoffmann, M. H. G., & Perger, M. v. (1996). Neues zu Platons „ungeschriebenen Lehren" [New Monographs on Plato’s “Unwritten Doctrines”]. *Philosophische Rundschau, 43*, 97–132.

Otte, M., & Hoffmann, M. H. G. (1994). Die Philosophie der Mathematik bei Charles S. Peirce im Kontext seines "evolutionären Realismus". Eine Untersuchung zum Peirceschen Kontinuitätsprinzip [Peirce’s Philosophy of Mathematics in the Context of his “Evolutionary Realism”. The Peircean Principle of Continuity]. *DIALEKTIK. Enzyklopädische Zeitschrift für Philosophie und Wissenschaften, 1994, Heft 3*, 181–186.

Hoffmann, M. H. G. (1993). The "Realization of the Due-Measure" as Structural Principle in Plato's Statesman. *POLIS. Newsletter of the Society for the Study of Greek Political Thought, 12*, Nos 1 & 2, 77–98.

Hoffmann, M. H. G. (1988). Rezension zu: Hans Jonas, Das Prinzip Verantwortung. Versuch einer Ethik für die technologische Zivilisation, Frankfurt a.M. 1984 [Hans Jonas, The imperative of responsibility. In search of an ethics for the technological age]. *Zeitschrift für Politik, 35*, 302–303.

C4. Software

- AGORA-net: A collaborative argument mapping tool: http://agora.gatech.edu. The source code is published under the Affero GPL (v3 or later) Open Source license at https://github.com/MichaelHoffmann/AGORA. AGORA-net is available for public use since August 2012. As of August 2020, the AGORA database contains around 21,000 argument maps—each with about 12 text boxes on average—that were created by more than 2,100 unique users. The development has been supported by a grant from the U.S. Department of Education (Grant # P116-S10-0006. September 1, 2010, to August 31, 2015).
- The Reflect! platform: http://reflect.gatech.edu. Reflect! orchestrates, over the course of a semester, activities and interaction for problem-based learning in small teams on wicked problems such as the governance of emerging technologies; complex policy issues such as health care reform, poverty, global trade, climate and environmental policies; the design of products and technologies; and planning processes with multiple and diverse stakeholders. The development of the Reflect! platform is supported by a grant from NSF’s Cyberlearning and Future Learning Technologies program (Award 1623419, September 2016 to August 2020).

C5. Patents

- U.S. Patent Application No. 62/865,476: “Intelligent Tutoring System” (The Argument Assessment Tutor). Filed: June 24, 2019. GTRC Reference No.: 8221. (Not finalized)

C6. Argument maps (Selection, not refereed)

An argument map justifies a claim by reasons in a graphically arranged structure of text boxes and arrows. The reasons are usually justified by further reasons, and so on, so that the overall structure can be very large. In collaborative argument mapping (realized in AGORA), objections, comments, questions, friendly amendments, references, and links, but also additional arguments, can be added by other people. Objections and counter-arguments can also be used to represent entire debates, such as in the map “The Debate about the Stern-Review and the Economics of Climate Change” (Hoffmann, 2010, below). This map with about 220 text boxes is the largest I created so far. The list below contains only argument maps that were exported from AGORA or cmap and published elsewhere.

AGORA argument maps:

Hoffmann, M. H. G. (2018). Kant's argument that causality is an a priori principle of cognition (sun warms body). SMARTech. Retrieved from http://hdl.handle.net/1853/59664

Hoffmann, M. H. G. (2015). Hume's argument that empirical knowledge cannot be certain, from the Enquires. Retrieved from http://works.bepress.com/michael_hoffmann/51/.

Hoffmann, M. H. G. (2014). Deductive argument visualization stimulates reflection on implicit background assumptions. Retrieved from http://works.bepress.com/michael_hoffmann/46

Hoffmann, M. H. G. (2014). Developing scientific hypotheses and experimental designs in form of an argumentation. Loewi's crucial experiment on chemical neurotransmission. Retrieved from http://works.bepress.com/michael_hoffmann/49.

Hoffmann, M. H. G. (2014). Loewi's argument that neuro-transmission works with chemical signals instead of electrical (short version). Retrieved from http://works.bepress.com/michael_hoffmann/50.

Hoffmann, M. H. G. (2014). Hypothesis generation and testing: A template for biomedical research. Retrieved from http://works.bepress.com/michael_hoffmann/48.

Hoffmann, M. H. G. (2014). Heyns's 2013 argument in the Guardian that lethal autonomous robots (LARs) should be banned. Retrieved from http://works.bepress.com/michael_hoffmann/44

Hoffmann, M. H. G. (2014). Heyns's 2013 argument that all states should declare moratoria on lethal autonomous robots. Retrieved from http://works.bepress.com/michael_hoffmann/45

Hoffmann, M. H. G. (2014). Ron Arkin's 2013 argument for a moratorium on deployment, but no ban of lethal autonomous robots. Retrieved from http://works.bepress.com/michael_hoffmann/42

Hoffmann, M. H. G. (2014). Sparrow's 2012 argument that robotic weapons are desastrous for peace. Retrieved from http://works.bepress.com/michael_hoffmann/43

Hoffmann, M. H. G. (2013). Why the presentation of arguments in logical form has advantages. Retrieved from http://works.bepress.com/michael_hoffmann/40.

Argument maps constructed in cmap (see http://cmap.ihmc.us):

Hoffmann, M. H. G. (2010). The Debate about the Stern-Review and the Economics of Climate Change.

Retrieved from http://hdl.handle.net/1853/46190.

Hoffmann, M. H. G. (2010). LAM map of Nagel's core argument in "The Problem of Global Justice" (2005). Retrieved from http://works.bepress.com/michael_hoffmann/32.

Hoffmann, M. H. G. (2010). Hume's argument that empirical knowledge is impossible: http://tinyurl.com/4nfb6sd.

Hoffmann, M. H. G. (2010). Xu Huiying, "Humankind Takes up Environmental Ethics," Chinese Education & Society, 37, 4 (2004): 16-23: http://tinyurl.com/pw5f7g.

Hoffmann, M. H. G. (2009). Argument Visualization in the Political Arena: The Debate on Global Climate Engineering. Retrieved from http://works.bepress.com/michael_hoffmann/2.

C7. Videos

2021: What is the Reflect! platform (9:42 min): https://reflect.gatech.edu/

2020: The Reflect! platform (45s marketing video): https://reflect.gatech.edu/

2018: Human-Computer Interaction Institute's 2018 Seminar Series at Carnegie Mellon University. "The Reflect! platform: A cognitive system for dealing with wicked problems in teams." https://hcii.cmu.edu/news/seminar/event/2018/10/reflect-platform-cognitive-system-dealing-wicked-problems-teams

2016: GVU Center Brown Bag talk: "Using Reflection Tools for Digital Deliberation on Wicked Problems." http://gvu.cc.gatech.edu/event/brown-bag-archive/gvu-center-brown-bag-michael-hoffmann-using-reflection-tools-digital

2013: TechDebates on emerging technologies

This series of debates—hosted by myself as the Co-Director of Georgia Tech's Center for Ethics and Technology—was intended to stimulate public reflection and deliberation on emerging technologies. What is the purpose of these technologies? What are the risks and ethical concerns? How will they change society and what it means to be human?

Only one pilot debate was realized on November 18, 2013: The TechDebate on Lethal Autonomous Robots ("Killer Robots"). We asked two experts to help us—from their varying points of view—to navigate through the complexity of deliberations that are still in their infancy: Ron Arkin, Professor at Georgia Tech's College of Computing, and Rob Sparrow, Philosophy Professor at Monash University in Australia and one of the founding members of the International Committee for Robot Arms-Control (icrac.net). Each TechDebate was planned to be a live event both on the Georgia Tech campus and on the Internet. The TechDebate on Lethal Autonomous Robots is published on YouTube: http://youtu.be/nO1oFKc_-4A.

C8. Articles in popular magazines (Editor reviewed)

Hoffmann, M. H. G. (2006). How to change your mind—even if you do not plan to do it... [Electronic Version]. *SIGNAL. Newsletter of the International Association for Conflict Management, 22*, pp.21, 23. Online http://www.iacm-conflict.org/SIGNAL/SIGNAL-v21-2.pdf.

Otte, M., & Hoffmann, M. H. G. (1996). Warum ist Mathematik allgemeinbildend? [Why Mathematics is Part of General Education?]. *Mitteilungen der Gesellschaft für Didaktik der Mathematik, 62*, 35–39.

Hoffmann, M. H. G. (1994). Jona oder die Kunst, unrecht haben zu können. Überlegungen zur

hermeneutischen Praxis [Jona or the Art of Being Wrong. Reflections on Hermeneutic Practice]. *LESARTEN. Zeitschrift für Interpretation, 2*, 83–120. Available at: http://works.bepress.com/michael_hoffmann/19

C9. Contributions to Conference proceedings (not refereed)

Hoffmann, M. H. G. (2020). The Argument Assessment Tutor (AAT). In C. D. Novaes, H. Jansen, J. A. v. Laar & B. Verheij (Eds.), *Reason to Dissent: Proceedings of the 3rd European Conference on Argumentation, Volume I. Studies in Logic and Argumentation* (pp. 289-303). London: College Publications. Retrieved from https://www.collegepublications.co.uk/logic/sla/?00012.

Hoffmann, M. H. G. (2019). Reflective consensus building as a goal of argumentation. In B. Garssen, D. Godden, G. R. Mitchell & J. H. M. Wagemans (Eds.), *Proceedings of the 9th International Conference of the International Society for the Study of Argumentation* (pp. 514-520). Amsterdam, NL: Sic Sat. Retrieved from http://cf.hum.uva.nl/issa/ISSA_2018_proceedings.pdf.

Hoffmann, M. H. G. (2016). Commentary on Leite, Martins and Eğilmez's Towards an Online Social Debating System. In D. Mohammed & M. Lewiński (Eds.), *Argumentation and Reasoned Action: Proceedings of the First European Conference on Argumentation, Lisbon, 9-12 June 2015* (Vol. 1, pp. 399-401). London: College Publications.

Hoffmann, M. H. G. (2015). Changing the Practice of Knowledge Creation through Collaborative Argument Mapping on the Internet. In B. Garssen, D. Godden, G. Mitchell & F. S. Henkemans (Eds.), *Proceedings of the 8th International Conference of the International Society for the Study of Argumentation* (pp. 578-589). Amsterdam, NL: Sic Sat.

Hoffmann, M. H. G., & Borenstein, J. (2012). Changing Engineering Ethics Education: Understanding ill-structured problems through argument visualization in collaborative learning. Paper presented at the 119th ASEE Annual Conference & Exposition, June 10 - 13, 2012 (American Society for Engineering Education), San Antonio, Texas. Available at: http://www.asee.org/public/conferences/8/papers/3445/view

Hoffmann, M. H. G. (2011). Cognitive Effects of Argument Visualization Tools. Argument Cultures: Proceedings of the 8th International Conference of the Ontario Society for the Study of Argumentation (OSSA), May 18-21, 2011, 1-12. Available at: http://works.bepress.com/michael_hoffmann/35

Hoffmann, M. H. G. (2007). Searching for common ground on Hamas through Logical Argument Mapping. In H. V. Hansen, C. W. Tindale, J. A. Blair, R. H. Johnson & D. M. Godden (Eds.), *Dissensus and the search for common ground* (pp. 1-26). Windsor, ON: OSSA: CD-ROM.

Hoffmann, M. H. G. (2003). „Entdeckendes Lernen" – semiotisch gefasst [Learning by Discovery – A Semiotic Approach]. In H.-W. Henn (Ed.), *Beiträge zum Mathematikunterricht. Vorträge auf der 37. Tagung für Didaktik der Mathematik vom 3. bis 7. März 2003 in Dortmund* (pp. 305-308). Hildesheim: Franzbecker.

Hoffmann, M. H. G. (2001). Skizze einer semiotischen Theorie des Lernens [Outline of a Semiotic Theory of Learning]. In G. Kaiser (Ed.), *Beiträge zum Mathematikunterricht. Vorträge auf der 35. Tagung für Didaktik der Mathematik vom 5. bis 9. März 2001 in Ludwigsburg* (pp. 293–296). Hildesheim: Franzbecker.

Hoffmann, M. H. G. (2000). Is there a 'Logic' of Abduction? In A. Gimate-Welsh (Ed.), Ensayos Semióticos. *Dominios, modelos y miradas desde el cruce de la naturaleza y la cultura (= Selected papers - 6th Congress of the International Association for Semiotic Studies, Guadalajara 1997)* (pp. 617–628).

Mexico City: Grupo Editorial Miguel Angel Porrúa / Editorial Universidad Autónoma de Puebla / Asociación Mexicana de Estudios Semióticos (ISBN 970-701-088-6).

Hoffmann, M. H. G. (2000). The Role of "Intuition" in Knowledge Development. In A. Aliseda & D. Pearce (Eds.), *14th European Conference on Artificial Intelligence. ECAI Workshop Notes: Scientific Reasoning in AI and Philosophy of Science* (pp. 34–39). Berlin.

Hoffmann, M. H. G. (2000). Semiotik in der Mathematikdidaktik. Zu einer möglichen Bündelung von Forschungsinteressen innerhalb der GDM [Semiotics in mathematics education. How to focus research interests within the German Society of Mathematics Education]. In M. Neubrand (Ed.), *Beiträge zum Mathematikunterricht. Vorträge auf der 34. Tagung für Didaktik der Mathematik vom 28. Februar bis 3. März 2000 in Potsdam* (pp. 298–301). Hildesheim: Franzbecker.

Hoffmann, M. H. G. (1999). Zur Rolle von Modellen und Metaphern bei der Entwicklung neuer Theorien [The Role of Models and Metaphors for the Development of New Theories]. In J. Mittelstraß (Ed.), *Die Zukunft des Wissens. XVIII. Deutscher Kongreß für Philosophie Konstanz 1999, Workshop-Beiträge* (pp. 793–801). Konstanz: UVK Universitätsverlag Konstanz.

Hoffmann, M. H. G. (1998). Erkenntnistheoretische Grundlagen des Lernens: Lernen als Verallgemeinerung [Epistemological Foundations of Learning Processes: Learning as Generalization]. In M. Neubrand (Ed.), *Beiträge zum Mathematikunterricht. Vorträge auf der 32. Tagung für Didaktik der Mathematik vom 2.-6. März 1998 in München* (pp. 311–314). Hildesheim: Franzbecker.

Hoffmann, M. H. G. (1996). Eine semiotische Modellierung von Verallgemeinerungsprozessen [A Semiotic Model for Processes of Generalization]. In C. Hubig & H. Poser (Eds.), *Cognitio humana - Dynamik des Wissens und der Werte. XVII. Deutscher Kongreß für Philosophie Leipzig 1996, Workshop-Beiträge* (Vol. 1, pp. 560–567).

C10. Internet-Publications

Hoffmann, M. H. G. (2014). Logical argument mapping: A method for overcoming cognitive problems of conflict management. *Georgia Tech's School of Public Policy Working Paper Series*. Retrieved from https://spp.gatech.edu/publications/pub/354

Hoffmann, M. H. G. (2011). Understanding Controversies and Ill-Structured Problems Through Argument Visualization. Curriculum and Learning Materials for Problem-based Learning in Small Groups of Students Who Work Autonomously on Projects with the Interactive AGORA Software, Including an Exemplary Reader on Genetically Modified Plants. Retrieved from http://works.bepress.com/michael_hoffmann/38.

Hoffmann, M. H. G., Curry, J., & Pu, C. (2011). EarthAgora: A collaborative knowledge management tool. White Paper describing a possible EarthCube design. Retrieved from http://api.ning.com/files/2RKRy-*0kC95226Yt2gAyYVbdPy9PRomy2k26hOdXHlQqb0YuspoD6Upi0JWAFKGwCK1aCbis2jUD7Z39y*lsQ8yyicT1eo1/EarthAgora_GeorgiaTech.pdf.

Hoffmann, M. H. G. (2011). Visualizing Ethical Controversies and Positions by Logical Argument Mapping (LAM) – A Manual. *Georgia Tech's School of Public Policy Working Paper Series*. Retrieved from https://spp.gatech.edu/publications/pub/399

Hoffmann, M. H. G., Nersessian, N., Schmidt, J. C., Decker, M., & Hirsch, P. (2010). Interdisciplinary Collaboration: Cognitive Conditions and Tools. White Paper for NSF's SBE 2020: Future Research in the Social, Behavioral & Economic Sciences. Retrieved from

http://www.nsf.gov/sbe/sbe_2020/submission_detail.cfm?upld_id=244.

Hoffmann, M. H. G. (2010). Possibilities, limits, and conditions of a "philosophy in the field." Second International Workshop on the Philosophy of/as Interdisciplinarity, Neversdorf/Hamburg, Sept 18 - 21, 2010. http://www.pin-net.gatech.edu/presentations/Hoffmann_PIN-2010.pdf

Hoffmann, M. H. G. (2008). Reflective argumentation. *Georgia Tech's School of Public Policy Working Paper Series*. Retrieved from https://spp.gatech.edu/publications/pub/393

Hoffmann, M. H. G. (2008). Analyzing Framing Processes By Means Of Logical Argument Mapping, IACM 21st Annual Conference. *Georgia Tech's School of Public Policy Working Paper Series.* Retrieved from https://spp.gatech.edu/publications/pub/385. (Forthcoming in B. Donohue, S. Kaufman and R. Rogan (eds.), Framing in Negotiation: State of the Art.)

Hoffmann, M. H. G. (2007). Power and Limits of Dynamical Systems Theory in Conflict Analysis. *IACM 2007 Meetings Paper Available at SSRN:* http://ssrn.com/paper=1087364.

Hoffmann, M. H. G. (2007, Nov. 9). Logical argument mapping (LAM): A cognitive-change-based method for building common ground. http://www.prism.gatech.edu/~mh327/argument-mapping_111.ppt.

Hoffmann, M. H. G. (2007, March 31). Logical argument mapping (LAM): A tool for problem solving, argumentation, deliberation, and conflict management. Retrieved March 31, 2007, from http://www.prism.gatech.edu/~mh327/argument-mapping_114_March31.ppt.

Hoffmann, M. H. G. (2007). Cognitive Conditions of Diagrammatic Reasoning. *Georgia Tech's School of Public Policy Working Paper Series*. Retrieved from https://spp.gatech.edu/publications/pub/373

Hoffmann, M. H. G. (2006). Framing: An Epistemological Analysis. Social Sciences Research Network. SSRN eLibrary, Paper Available at *SSRN:* http://ssrn.com/abstract=916007*, IACM 19th Annual* Conference.

Hoffmann, M. H. G. (2005). The curse of the Hegelian heritage: "Dialectic," "contradiction," and "dialectical logic" in Activity Theory. *Georgia Tech's School of Public Policy Working Paper Series*. Retrieved from https://spp.gatech.edu/publications/pub/358

Hoffmann, M. H. G. (2003). Was ist Mathematik? Eine Unterscheidung mathematischer Tätigkeiten [What is mathematics? Distinguishing mathematical activities] [Electronic Version] from http://www.uni-bielefeld.de/idm/personen/mhoffman/Was-ist-Mathematik.html.

Hoffmann, M. H. G., & Seeger, F. (2003). *Science Education across Europe (SEE!). A Project on Generalisation in Science: Overcoming the Split between the Two Cultures. A proposal for the European Science Education Initiative (FP6-2003-Science and Society-5)*. Occasional Paper 187, October 2003: Arbeiten aus dem Institut für Didaktik der Mathematik der Universität Bielefeld, 42 S. (http://www.uni-bielefeld.de/idm/serv/dokubib/occ187.pdf).

Hoffmann, M. H. G. (2001). Peirces Zeichenbegriff: seine Funktionen, seine phänomenologische Grundlegung und seine Differenzierung [Electronic Version] from http://www.uni-bielefeld.de/idm/semiotik/Peirces_Zeichen.html.

Hoffmann, M. H. G. (2001). The 1903 Classification of Triadic Sign-Relations [Electronic Version]. Digital Encyclopedia of Charles S. Peirce: http://www.digitalpeirce.fee.unicamp.br/hoffmann/p-sighof.htm.

Hoffmann, M. H. G., & Seeger, F. (2000). Semiotik in der Mathematikdidaktik. Ein Instrument für eine Didaktik des 21. Jahrhunderts [Semiotics in Mathematics Education. An Instrument for the 21.

Century][Electronic Version] from http://www.uni-bielefeld.de/idm/semiotik/Positionspapier_AG-Semiotik.html.

Hoffmann, M. H. G. (2000). Theorien neuronalen Lernens in ihrer historischen Entwicklung [Theories of Learning in their Historical Development] [Electronic Version] from http://www.uni-bielefeld.de/idm/neuro/Lernformen.html.

Hoffmann, M. H. G. (1998). Erkenntnistheoretische Grundlagen des Lernens: Lernen als Verallgemeinerung. In M. Neubrand (ed.), *Beiträge zum Mathematikunterricht. Vorträge auf der 32. Tagung für Didaktik der Mathematik vom 2.-6. März 1998 in München* , Franzbecker: Hildesheim, 311-314 (die online publizierte Fassung ist substantiell erweitert).Retrieved from http://works.bepress.com/michael_hoffmann/33.

Otte, M., Mies, T., & Hoffmann, M. H. G. (1997). Die Symmetrie von Subjektbezug und Objektivität wissenschaftlicher Verallgemeinerung. Untersuchungen zur Begründung wissenschaftlicher Rationalität im Anschluß an die mathematische Philosophie von Charles S. Peirce [The Symmetry of Subjectivity and Objectivity in Scientific Generalization. Studies Concerning the Foundation of Scientific Rationality in the Mathematical Philosophy of Charles S. Peirce and his Followers]. Occasional Paper 162, Februar 1997: Arbeiten aus dem Institut für Didaktik der Mathematik der Universität Bielefeld, 62 S. Download: http://www.uni-bielefeld.de/idm/serv/dokubib/occ162.pdf.

Hoffmann, M. H. G. (1996). Eine semiotische Modellierung von Lernprozessen. Peirce und das Wechselverhältnis von Abduktion und Vergegenständlichung. Occasional Paper 160, November 1996: Arbeiten aus dem Institut für Didaktik der Mathematik der Universität Bielefeld, 51 S. (Online: http://www.uni-bielefeld.de/idm/serv/dokubib/occ160.pdf).

Otte, M., Hoffmann, M. H. G., & Wolff, M. (1994). Die Philosophie der Mathematik bei Charles S. Peirce im Kontext seines "evolutionären Realismus". Zum Peirceschen Kontinuitätsprinzip [Peirce's Philosophy of Mathematics in the Context of his "Evolutionary Realism". The Peircean Principle of Continuity]. Occasional Paper 155, Juli 1994: Arbeiten aus dem Institut für Didaktik der Mathematik der Universität Bielefeld, 57 S. Download: http://www.uni-bielefeld.de/idm/serv/dokubib/occ155.pdf.

Project websites

- The Reflect! platform: http://reflect.gatech.edu.
- eColloq Series on Cyberlearning: http://circlcenter.org/ecolloq/
- AGORA: Participate – Deliberate! http://agora.gatech.edu
- Philosophy of /as Interdisciplinarity Network: http://pin-net.gatech.edu/
- Logical argument mapping (LAM): http://lam.spp.gatech.edu

Presentations

A. Invited Speaker

Panelist at the "AI Ethics Workshop: Competency Catalyst - SkillSync - Jill Watson." School of Interactive Computing at Georgia Tech (Ashok Goel), March 1, 2021.

Workshop on Argument Construction and Argument Assessment. Summer School "Teaching Critical Thinking." University of Groningen, NL, June 24, 2019, 1pm to 4pm.

The Reflect! platform: A cognitive system for dealing with wicked problems in teams. Invited talk at the Human-Computer Interaction Institute's 2018 Seminar Series at Carnegie Mellon University, October 5, 2018.

Workshop: Developing Interdisciplinary Research Proposals with the support of an Online Deliberation Tool. Organized by the Institute for Interdisciplinary Studies, University of Amsterdam, July 2, 2018, 13.00 – 17.00 hrs.

Reflective Consensus building on wicked problems on the Reflect! platform. Talk in the Speaker Series of the Department of Philosophy at Michigan State University, October 27, 2017.

AGORA-net: ICLAST panel "How to Use Different Digital Humanities/Social Science Tools," Ivan Allen College of the Liberal Arts, Georgia Institute of Technology, October 28, 2016.

Using Reflection Tools for Digital Deliberation on Wicked Problems. GVU Center Brown Bag talk, September 8, 2016.

Philosophy of Technology. Science, Technology, and Society: STS Core Seminar (HTS6743 / LMC6743 / PUBP6743). Georgia Institute of Technology, September 29, 2015.

Argument mapping with AGORA-net: ICLAST: Technology to Broaden Education, Ivan Allen College of the Liberal Arts, Georgia Institute of Technology, August 28, 2015

Peirce's diagrammatic reasoning as a foundation for computer-supported reflective argumentation. The Lisbon Centennial Peirce Workshop: The Actuality of Peirce's Thought II. June 9, 2015, Centro de Filosofia das Ciências da Universidade de Lisboa, Portugal.

Tutorial: Collaborative argument mapping in AGORA-net. The 2015 International Conference on Collaboration Technologies and Systems (CTS 2015), June 01 - 05, 2015, Atlanta

Navigating Conversations Visually (with Martin Eppler). Cognitive Systems Workshop, March 3, 2015, Georgia Institute of Technology

Against the verbal-visual divide: Peirce's concept of diagrammatic reasoning and the representational, epistemic, and cognitive function of argument visualization systems. Diagramming Evidence: Visualizing Connections in Science and the Humanities, Centre for Reasoning, Argumentation and Rhetoric (CRRAR) at the University of Windsor, April 25-26, 2014. http://cfl.uwindsor.ca/crrar/diagramming-evidence-visualizing-connections-in-science-and-humanities.

Designing argument visualization software as cognitive tools. 10th eColloq on Argumentation, Feb. 24, 2014: http://ecolloq.wordpress.com/.

To exist or not to exist. Between John Rawls's Principles of Justice and Zygmund Bauman's "Wasted lives." English Avenue Community Think Tank, Atlanta, November 23, 2013.

Understanding Social Inequality and the Implications of Science and Technology in the English Avenue Neighborhood as Part of the New STS Curriculum. HTS Speaker Series (School of History, Technology, and Society, Georgia Tech), November 4, 2013.

What exactly does it mean to address "real-world problems"? International Conference 2012 of the Philosophy of / as Interdisciplinarity Network in Tübingen, Germany, September 21-23.

Learning through struggling with diagrams. International Conference on "Mind in Motion and the Body of the Sign. Peirce's Semiotical Pragmatism," Humboldt-Universität zu Berlin, March 15–17, 2012.

Wie die kognitive Power externer Repräsentationen in virtuellen Lernwelten genutzt werden kann. 13. Internationaler Kongress der Deutschen Gesellschaft für Semiotik (DGS), Universität Potsdam, 12. bis 16. October 2011.

AGORA: Applying Logic to Structure Collaboration. Russian Academy of Science, Moscow, June 3rd, 2011.

Engineering Ethics Education: Understanding Ill-structured Problems and Conflicting Needs, Interests and Values Through Argument Visualization. Keynote given at the International Seminar on "Modernization of Educational Process in the Area of Engineering Using Innovative Methods and Technologies." Bauman Moscow State Technical University, Moscow, June 1st, 2011.

Panel on "The Future of Philosophy," together with Robert Frodeman, Steve Fuller, Nancy Tuana, and Paul Thompson. At the conference "A New Practice of Philosophy. Taking Philosophy beyond Disciplinary Bounds." Third International Conference on the Philosophy of/as Interdisciplinarity, University of North Texas, March 7 – 9, 2011.

(co-author: Jason Borenstein (2010). *AGORA: a New Interactive and Web-based Learning Tool for Engineering Ethics*. Keynote presented at the International Seminar on "Development and Modernization of Educational Programs & Technologies," Bauman Moscow State Technical University, Moscow, Nov 17, 2010.

Possibilities, limits, and conditions of a "philosophy in the field." Second International Workshop on the Philosophy of/as Interdisciplinarity, Neversdorf/Hamburg, Sept 18 – 21, 2010.

Abduction and diagrammatic reasoning in a semiotic theory of scientific creativity. Center for Semiotics, Aarhus University, Aarhus, Denmark, November 5, 2009.

Images of world views. Revealing the inferential structure of belief systems through diagrammatic reasoning. Public lecture at the Universidade de Lisboa, Portugal, organized by the "Lisbon Centre of the Image between science and art (LCISA)," June 2, 2008.

Using the forces of diagrammatic rationality in Logical Argument Mapping. Two days seminar at he "Lisbon Centre of the Image between science and art (LCISA)," June 3-4, 2008.

Logical Argument Mapping: A method to analyze texts, narratives, and argumentations. Exemplified through two perspectives on how to deal with the Palestinian Hamas. Doctoral School of Organisational Learning, Learning Lab Denmark, University of Copenhagen, October 26, 2007.

Abduction and diagrammatic reasoning in a semiotic-pragmatic theory of learning. University of Copenhagen, October 25, 2007.

The quartiadic structure of shared intentionality and communication. A semiotic model of cognitive systems. Cognitive Science Brown Bag, Georgia Tech, September 15, 2006.

Seeing problems, seeing solutions. Abduction and diagrammatic reasoning in a semiotic theory of learning and scientific discovery. Paper presented at the International Meeting: Abduction and the Process of Scientific Discovery, Center of the Philosophy of Sciences, University of Lisbon 4th to 6th of May 2006.

Cognitive and semiotic conditions of abductive creativity. Paper presented at the Philosophy of Science Seminar, Universidade de Lisboa, Faculdade da Ciencia, 8. May 2006.

Diagrammatic Reasoning. University of North Carolina at Charlotte, Mathematics Department, March 31, 2006.

Model-Based Reasoning: A Tool for Overcoming Epistemological Problems of Conflict Management. Georgia Tech, Ivan Allan College, Science and Technology Seminar, 25. Februar 2005.

A model theoretic interpretation of Plato's Idea of the Good. Georgia Tech Philosophy Society, 11. November 2004.

Platons Axiomatisierung der mathêmata. May 23-24, 2002, Colloquium at the 65. birthday of Prof. Dr. Gernot Böhme, Darmstadt.

Was taugt Abduktion zur Lösung des Korrelationsproblems der Religionspädagogik? December 5-7, 2001, expert meeting „Abduktive Korrelation. Ein Neuansatz religiöser Bildung in der modernen Gesellschaft" at Katholisch-Theologische Fakultät der Universität Würzburg (Prof. Dr. H.-G. Ziebertz).

Zur Einheit mathematischen Wissens. Von Platon zu Gödel. May 10-11, 2001, Colloquium at the 70. birthday of Prof. Dr. Werner Beierwaltes, München.

Grundlagen einer semiotischen Theorie des Lernens. December 4, 2000, Institut für Mathematik, Abteilung für Didaktik der Mathematik, Universität Klagenfurt, Austria.

Mathematik als Prozess der Verallgemeinerung von Zeichen. June 29, 2000, at Mathematikdidaktisches Kolloquium des Instituts für Entwicklung und Erforschung des Mathematikunterrichts (IEEM) der Universität Dortmund.

Die Peircesche Semiotik als Theorieansatz der Mathematikdidaktik. May 28.-30, 1999, at the weekend workshop „Mathematikdidaktische Theorieansätze" in Wermelskirchen-Dabringhausen near Cologne.

Peirce and the Possibility of Scientific Progress: „Diagrammatic Reasoning" as a Solution of the Internalism-Externalism-Dilemma. International Colloquium, May 19-21, 1999, Nijmegen University, The Netherlands: The Challenge of Pragmatic Process Philosophy.

Zur Bedeutung von Symbolen nach Peirce. Colloquium „Symbole und Handeln – wie Zeichen praktisch werden". October, 10, 1997, TU Dresden, DFG-Sonderforschungsbereich 537 „Institutionalität und Geschichtlichkeit".

B. Conference presentations

Reflexions-basiertes Selbst-korrigieren im Handeln als Lernziel: Eine Hands-on Experience mit der Reflect! Plattform. 4. Internationale Tagung der Philosophiedidaktik. Reflexion und Handlung – Schlüsselkategorien der Philosophiedidaktik im Konflikt? July 2-3, 2021. Online.

The Reflect! platform: Teaching people to cope with ethical challenges of wicked problems and to develop consensus on fundamental disagreements. An interactive 60 min workshop at the 2021 Summer Series of The American Association of Philosophy Teachers. June 23, 2021. Online.

Using the Reflect! platform as an online tool for inter- and transdisciplinary proposal development and as a testing environment for SciTS. An interactive 90 min workshop at the 12th Annual International Science of Team Science (SciTS) Conference. June 7-11, 2021. Online.

Guided Proposal Development on the Reflect! Platform. Boosting Toolkits & Methods: Official ITD-Alliance Working Group Kick-Off. January 15, 2021, online.

Teaching the Reflection on Argument Quality with a Novel Argument Visualization Tool. Workshop on Argument Visualisation (ArgVis 2020) at the 8th International Conference on Computational Models of Argument (COMMA 2020), September 8, 2020. Online.

The Reflect! platform: Teaching people to cope with ethical challenges of wicked problems and to develop consensus on fundamental disagreements. A Pedagogical Demonstration. 29th Annual

International Conference of the Association for Practical and Professional Ethics (APPE), February 20-23, 2020, Atlanta, GA.

Ethical Goals, Knowledge, Skills, Dispositions, and Institutions. Contribution to the panel *Assessing Ethics Education* at the 29th Annual International Conference of the Association for Practical and Professional Ethics (APPE), February 20-23, 2020, Atlanta, GA.

Inclusive, Deliberative, and Coalescent Policy Making on Digital Behavioral Technologies. Paper presented at the Workshop Digital Behavioural Technology, Vulnerability and Justice. July 1 – 3, 2019 at LMU Munich and TU Munich.

The Argument Assessment Tutor (AAT). Long Paper presented at the 3rd European Conference on Argumentation, June 24-28, 2019, Groningen, Netherlands.

Power to the people? A new approach to deliberative democracy and technology. Paper presented at Technology and Power. The 21st Conference of the Society for Philosophy and Technology, May 20-22, 2019, College Station, TX.

Reflective consensus building as a goal of argumentation.9th International Conference of the International Society for the Study of Argumentation (ISSA), July 3-6, 2018, University of Amsterdam.

Reflective consensus building on wicked problems with the Reflect! platform. Paper presented at the 4th Meeting of the Consortium for Socially Relevant Philosophy Of/In Science & Engineering (SRPoiSE), June 4-6, 2018 Atlanta.

CESA: Critical and Ethical Sensitivity Assessment. Presentation for the Symposium: Assessing Ethics Education at the 4th Meeting of the Consortium for Socially Relevant Philosophy Of/In Science & Engineering (SRPoiSE), June 4-6, 2018 Atlanta.

Reflective consensus building on wicked problems with the Reflect! platform. A 3.5-hour workshop to familiarize experts with the Reflect! approach at the Science of Team Science (SciTS) 2018 Conference in Galveston, Texas, May 21-24, 2018.

Reflective consensus building on wicked problems. Paper presented at the Pubic Philosophy Network's conference in Boulder, CO, February 8-10, 2018.

Mediating conflicts with the Reflect! platform online and in workshop settings. Paper presented at the 30th Annual Meeting of the International Association for Conflict Management (IACM), July 9-12, 2017, Berlin, Germany.

Fostering reflection and self-correcting reasoning with deliberation and argument visualization systems. Paper presented at the Second European Conference on Argumentation, June 20-23, Fribourg, Switzerland.

Governance of emerging technologies through online deliberation. Paper presented at the Fifth Annual Conference on Governance of Emerging Technologies: Law, Policy & Ethics, May 17-19, 2017, Sandra Day O'Connor College of Law, Arizona State University, Phoenix, AZ.

Using Reflection Tools for Decision Making and Negotiation on Wicked Problems. Paper presented at the 29th Annual Conference of the International Association for Conflict Management (IACM), June 26-29, 2016, New York City, NY.

Dealing with wicked problems: Strategies and technologies Paper presented at the 3rd Annual Meeting of the Consortium for Socially Relevant Philosophy of/in Science and Engineering (SRPoiSE3), May 19-22, 2016, Richardson, TX.

Collaborative and adversarial reframing: How to use argument mapping to cope with "wicked problems" and intractable conflicts. Paper presented at the 1st European Conference on Argumentation: Argumentation and Reasoned Action. 9-12 June 2015, Lisbon.

Realizing Peirce's ideas on self-controlled reasoning and the growth of reasonableness in collaborative argument mapping on the Internet. Paper presented at the ConStructPeirce Workshop, July 20-21, 2014, Houghton Library at Harvard University.

Changing the Practice of Knowledge Creation through Collaborative Argument Mapping on the Internet. 8th International Conference of the International Society for the Study of Argumentation, July 1-4, 2014, University of Amsterdam.

Some preliminary considerations about things needed for argument-based deliberation on the web. Arguing on the Web: Theory, Analysis and Application, June 30 – July 1. 2014, Amsterdam, NL.

Problem-based learning with the computer supported collaborative argument visualization software AGORA-net. Annual Meeting of the Association for Practical and Professional Ethics, Jacksonville, FL, February 27 to March 2, 2014.

Using Problem-based Learning to Prepare Students for Ill-structured Ethical Challenges. Panel presentation at ASEE 2013 (American Society for Engineering Education), June 23 - 26, 2013, Atlanta.

Collaborative, problem-based learning with the argument visualization software "AGORA-net." American Association of Philosophy Teachers, Workshop on Teaching and Learning in Philosophy, June 1, 2013, Morehouse College.

Problem-based learning with the argument visualization software "AGORA-net." Ontario Society for the Study of Argumentation (OSSA), May 22-26, 2013, University of Windsor, Canada.

AGORA-net: Web-based argument visualization as a tool for public deliberation and participation. Paper presented at the Advancing Public Philosophy Conference, March 14 - 16, 2013.

Collaborative online learning with the argument-visualization software "AGORA-net." 4th International Conference on Argumentation, Rhetoric, Debate and the Pedagogy of Empowerment, Doha, Qatar, January 10-13, 2013.

Teaching Critical Thinking in Online Learning Environments through Argument Visualization Software. 2012 Eastern Division Meeting of the American Philosophical Association (APA), Atlanta, GA, December 27-30, 2012.

Argument Mapping and Knowledge Management. Model-Based Reasoning in Science and Technology. Theoretical and Cognitive Issues (MBR'012), Sestri Levante, Italy, June 21-23, 2012.

Changing Engineering Ethics Education: Understanding ill-structured problems through argument visualization in collaborative learning. 119th Annual Conference of the American Society for Engineering Education (ASEE), June 10 - 13, 2012, San Antonio, Texas.

Cognitive Effects of Argument Visualization Tools. 8th International Conference of the Ontario Society for the Study of Argumentation (OSSA), Windsor, CA, May 18-21, 2011, 1-12.

Diagrams as Scaffolds for Creativity. Visual Representations and Reasoning. A workshop of the 24th AAAI Conference on Artificial Intelligence (AAAI-10), Atlanta, July 11, 2010.

Powerful Arguments: Logical Argument Mapping. 7th Conference on Argumentation of the International Society for the Study of Argumentation, Amsterdam, NL, June 29 to July 2, 2010.

Climate Ethics: Visualizing and Structuring an Ethical Debate by Means of Logical Argument Mapping. American Philosophies Forum, The 2010 Symposium: The Future of Ethics, Emory University, Atlanta, April 8-10, 2010.

Visualizing Webs of Beliefs, Values, and Attitudes for Cross-Cultural Understanding. Global Dialogue Conference 2009: Responsibility -- Climate Change as Challenge for Intercultural Inquiry on Values, Aarhus University, Aarhus, Denmark.

Explaining problems of interdisciplinary communication from a semiotic perspectives. First International Workshop on the Philosophy of Interdisciplinarity, Atlanta, September 28-29, 2009.

Analyzing Framing Processes By Means Of Logical Argument Mapping. 21st Annual Conference of the International Association for Conflict Management (IACM), Chicago, July 3-6, 2008.

Stimulating creativity by means of Logical Argument Mapping. MOPAN - 15th Annual Conference on Multi-Organizational Partnerships, Alliances and Networks, Boston, June 25 - 27, 2008.

Requirements for reflective argument visualization tools: a case for using validity as a normative standard. 2nd International Conference on Computational Models of Argument (COMMA), Toulouse, France, 28-30 May 2008.

Logical Argument Mapping: A cognitive-change-based method for building common ground. 2nd International Pragmatic Web Conference, Tilburg, Netherlands, 22-23rd Oct. 2007.

Power and limits of dynamical systems theory in conflict analysis. 20th Annual Conference of the International Association for Conflict Management (IACM), Budapest, Hungary, July 1-4, 2007.

Searching for common ground on Hamas through Logical Argument Mapping. Ontario Society for the Study of Argumentation (OSSA), June 6 - 9, 2007, University of Windsor.

Abduction and diagrammatic reasoning in a theory of scientific discovery. Society for the Advancement of American Philosophy (SAAP). 34th Annual Meeting, Columbia, SC, March 8-10 2007.

Quartadic Sign relations. A semiotic model of cognitive systems. Semiotic Society of America (SSA). 2006 Annual meeting Purdue University, West-Lafayette, September 28 – October 1.

Charles Peirce: Formen kreativer Tätigkeit in der Mathematik. XX. Deutscher Kongreß für Philosophie in Berlin, September 26.-30., 2005: Kreativität.

How to change your mind? Argument mapping as a tool to mediate conflicts. First ISCAR Congress. International Society for Cultural and Activity Research, Seville, Spain, September 20-24, 2005.

Model-based Reasoning: A Tool for Overcoming Epistemological Problems of Conflict Management. 18th Annual Meeting of the International Association for Conflict Management (IACM), Seville, Spain, June 12-15, 2005.

Navigating Knowledge Boundaries between Formal Education and Workplace. Connections 2004 Conference. University of Victoria - Faculty of Education, May 6th, 2004.

Die Rolle von Modellen in der Biologie. 5. Internationaler Kongress der Gesellschaft für analytische Philosophie (GAP.5), September 22-26, 2003 in Bielefeld.

„Entdeckendes Lernen" - semiotisch gefasst. 37. Tagung für Didaktik der Mathematik, March 3-7, 2003 in Dortmund.

How to get it. MBR ´01: Model-Based Reasoning: Scientific Discovery, Technological Innovation, Values. Pavia, Italy, May 17-19, 2001.

Skizze einer semiotischen Theorie des Lernens. 35. Tagung für Didaktik der Mathematik, March 5-9, 2001

in Ludwigsburg.

Die synthetisch-pragmatische Mathematikauffassung im Gegensatz zur analytischen – ein Blick auf die Geschichte der Philosophie der Mathematik. Tagung: „Allgemeine Mathematik: Mathematik und Mensch“. Technische Hochschule Darmstadt, November 17-19, 2000.

Semiotik im Spannungsfeld von Mathematik und ihrer Didaktik. 1. Herbsttagung des GDM-Arbeitskreises „Semiotik in der Mathematikdidaktik“, September 21-22, 2000 in Soest.

Semiotik in der Mathematikdidaktik. Zu einer möglichen Bündelung von Forschungsinteressen innerhalb der GDM. 34. Tagung für Didaktik der Mathematik, February 28 to March 3, 2000 in Potsdam.

Zur Rolle von Modellen und Metaphern bei der Entwicklung neuer Theorien. XVIII. Deutscher Kongreß für Philosophie, Konstanz, October 4-8, 1999: Die Zukunft des Wissens.

Die Peircesche Semiotik als Theorieansatz der Mathematikdidaktik. Tagung „Mathematikdidaktische Theorieansätze“, Universität Köln, May 28-30, 1999.

Using Signs in Abductive Reasoning: Peirce and the Problem of Creative Thinking and Acting. 4. Congress of the International Society for Cultural Research and Activity Theory. *Activity Theory and Cultural Historical Approaches to Social Practice*. Aarhus University, Denmark, June 7-11, 1998, workshop: Means of Communication and Learning: Comparison of Vygotskij and Peirce.

Elements of a Theory on Abduction. International Congress on Discovery and Creativity, May 14-16, 1998, University of Ghent, Belgium.

Erkenntnistheoretische Grundlagen des Lernens: Lernen als Verallgemeinerung. 32. Tagung für Didaktik der Mathematik, March 2-6, 1998, in Munich.

Is there a “Logic” of Abduction? 6th Congress of the IASS-AIS, International Association for Semiotic Studies – Association Internationale de la Sémiotique, in Guadalajara, Mexico, July, 13-18, 1997: Semiotics Bridging Nature and Culture.

Die soziale und die gegenständliche Dimension von Verallgemeinerungsprozessen. Tagung: „Allgemeine Mathematik: Ordnen, Strukturieren, Mathematisieren“. Technische Hochschule Darmstadt, October 10-14, 1996.

Eine semiotische Modellierung von Verallgemeinerungsprozessen. XVII. Deutscher Kongreß für Philosophie in Leipzig, September 23-27, 1996: Cognitio humana – Dynamik des Wissens und der Werte.

The “Realization of the Due-Measure” as Structural Principle in Plato's Statesman. Third Symposium Platonicum, University of Bristol, August 25-30, 1992.

Teaching

A. Goals

The goal of my teaching is to foster general reasoning skills: reflection and self-correction; how to approach wicked problems; how to construct strong and convincing arguments; how to assess the quality of arguments; how to clarify ideas and define concepts; learning to work in teams; social learning through mutual criticism and support; enjoying clear thinking.

B. Graduate courses taught at Georgia Tech, with teaching evaluations

		No. resp./ enrolled	*Teaching efficiency (max. 5.0)*	*College median for this class size*
PUBP 6010 Ethics and Epistemology in Public Policy, 3 hours, Public Policy MS program	Spring 2007	6/14	4.3	4.75
	Spring 2008	6/17	3.8	4.6
	Spring 2009	7/13	4.0	4.75
	Spring 2010	9/16	4.9	4.5
	Spring 2011	9/11	4.8	4.75
	Spring 2012	18/23	4.61	4.71
	Spring 2013	14/20	4.62	4.75
	Spring 2014	14/14	4.62	4.83
	Spring 2015	9/11	4.4	4.90
	Spring 2016	5/5	5	4.90
	Spring 2017	16/19	4.9	4.79
	Spring 2019	13/14	4.30	4.90
	Spring 2020	/10	no evaluation	no evaluation
Methods of Argument Analysis and Construction in Public Policy , 3 hours, MS / PhD program	Fall 2008	2/4	4.5	4.83
Responsible Conduct of Research (RCR), 1 hour, PhD students: PHIL 6000 H1	Summer 2012	11/31	4.58	n/a
RCR: PHIL 6000 H2	Summer 2012	15/34	4.5	n/a
RCR: PHIL 6000 H3	Summer 2012	7/28	3.88	n/a
PUBP 6001 Introduction to Public Policy	Fall 2013	9/16	4.7	4.67
	Fall 2014	6/9	4.8	4.80
PUBP 6748 Social Justice, Critical Theory, and Philosophy of Design	Fall 2013	4/5	2.5	4.78

C. Undergraduate courses taught at Georgia Tech, with Student evaluations

		No. resp./ enrolled	*Teaching efficiency (max. 5.0)*	*College median for this class size*
Philosophy of Science, 3 hours	Fall 2004	16/29	4.8	4.50
	Fall 2005	16/34	4.9	4.50
	Fall 2006	13/38	4.3	4.34
	Fall 2007	15/31	4.3	4.56
	Fall 2008	13/35	4.8	4.61
	Fall 2009	16/33	4.6	4.63

		No. resp./ enrolled	*Teaching efficiency (max. 5.0)*	*College median for this class size*
Logic and Critical Thinking – Argumentation, 3 hours	Spring 2005	21/30	4.7	4.55
	Spring 2006	16/29	4.8	4.67
	Spring 2007	15/32	4.1	4.65
	Spring 2008	16/33	4.6	4.6
	Spring 2009	8/34	4.5	4.63
Science and Values in the Policy Process, 3 hours	Spring 2005	12/23	4.6	4.55
	Spring 2006	12/21	4.8	4.67
Modern Philosophy, 3 hours	Fall 2005	23/32	4.7	4.50
Interreligious Understanding (elective), 3 hours	Fall 2006	22/32	4.7	4.65
	Fall 2007	11/29	4.8	4.56
PHIL 3109 Engineering Ethics (before 2011: Ethics and the Technical Professions)	Sum. 2007	0/38		n/a
	Sum. 2007	6/42	4.5	n/a
	Sum. 2009	35/160	4.1	n/a
	Fall 2011	23/34	4.82	4.62
	Fall 2012	15/37	4.67	4.68
PHIL 2010 Introduction to Philosophical Analysis	Fall 2009	8/29	4.5	4.63
	Fall 2010	12/32	4.3	4.61
	Fall 2011	16/30	4.67	4.62
	Fall 2012	15/32	4.4	4.68
PHIL 2025 Philosophical Analysis of Policy Choices	Spring 2010	14/32	4.2	4.5
	Spring 2011	20/25	4.7	4.64
	Spring 2012	8/24	4.5	4.71
	Spring 2013	8/24	4.5	4.75
	Spring 2015	13/14	3.4	4.90
	Spring 2016	21/24	3.7	4.80
	Spring 2019	29/30	3.8	4.80
	Spring 2020	/30	no evaluation	no evaluation
PHIL 4803 Philosophical Analysis with argument mapping (Special Topics)	Fall 2015	5/6	5	4.9
PHIL 3127 Science, Technology, and Human Values	Fall 2016	124/161	4.3	4.39
	Fall 2017	132/175	4.2	4.44
	Spring 2018	71/175	3.5	4.09
	Fall 2018	55/162	4.46	4.45
	Fall 2019	20/35	4.2	
	Fall 2019	15/33	4.7	

D. VIP Digital Deliberation

VIPs—Vertically Integrated Projects—are an innovative teaching approach in which undergraduate students work for up to three years for academic credit in multidisciplinary research teams with graduate students and faculty. These are long-term projects that follow the research trajectory of faculty. Students rotate in and out. Some of the currently established VIPs at Georgia Tech work since the program's inception 15 years ago. VIPs are spreading nationally and internationally.

Since August 2016, I am directing the VIP Digital Deliberation (the first year in partnership with Prof. Chris Le Dantec, LMC). Between four and ten undergraduate students per semester are working on tasks relating to design and development of the Reflect! platform, as well as usability testing and future developments. Our VIP Digital Deliberation was supported by a grant from the Digital Integrative Liberal Arts Center in the Ivan Allen College of Liberal Arts at Georgia Tech which paid for the project's research assistant (August 2016 to December 2017). Starting in August of 2018, another DILAC grant will support the VIP.

E. Dissertation Adviser

2014 – present: Rafael Castillo: Innovation intermediaries for inclusive development: the role of farmer cooperatives (co-adviser)

2012 – 2014: Fang Xiao: Interdisciplinarity Among Academic Scientists: Individual And Organizational Factors (co-adviser)

2008 Paul Hirsch: Making space for environmental problem solving (co-adviser)

F. Individual student guidance

2018, Fall and spring 2019: Philip A. Abel, Graduate Research Assistant and Teaching Assistant to support the VIP Digital Deliberation.

2018, Fall: Jenna M. White, Kristin Wells, and Sean F. Fahey, Teaching Assistants.

2018, Spring: Revathi Veriah, Kelly Tessier, and Karl Grindal, Teaching Assistants.

2017, Fall: Revathi Veriah, Daniel Sanbeg, and Ian Saunders, Teaching Assistants.

2017, Spring and fall: DeAnna Brown, Graduate Research and Teaching Assistant to support the VIP Digital Deliberation.

2016, August—October: Benjamin Staver (MS), Graduate Research Assistant to support the VIP Digital Deliberation.

2016, Fall: Jenna McGrath, Daniel Sanbeg, and Aline Banboukian, Teaching Assistants.

2014, Summer, Undergraduate Internship supervision (Jonathan Vallecillo)

2014, Spring, 2 Graduate Research Assistants for coding AGORA-net (Lokesh Balakrishnan, Vinodh Krishnan).

2014, Spring, 1 Graduate Research Assistants for the Center for Ethics and Technology (Ethan Butler).

2013, Fall, 2 Graduate Research Assistants for the Center for Ethics and Technology (Caroline Appleton, Ethan Butler).

2013, Fall, 1 Graduate Research Assistant for coding AGORA-net (Lokesh Balakrishnan).

2013, Spring, 1 Graduate Research Assistant for analyzing ArguSkill critical thinking assessment results

and helping to design the TechDebates on Ethics (Kirsten Bandyopadhyay).

2013, Spring, 3 Graduate Research Assistants for coding AGORA-net (Paul O'Neill, Lokesh Balakrishnan, Madhura Bhave).

2012, Fall, 1 Undergraduate student: Mapping the functionality of AGORA-net and preparing tutorials (Anuraag Das).

2012, Fall, 3 Graduate Research Assistants for coding AGORA-net (Paul O'Neill, Lokesh Balakrishnan, Madhura Bhave).

2012, Summer, Graduate Research Assistant for coding AGORA-net (Paul O'Neill)

2012, Spring, Computer Science undergraduate senior project for coding AGORA-net (Zachary Lee, Michelle Bjornas, Ruiqi Zhang)

2011, Fall, Graduate Research Assistant for coding AGORA: Participate – Deliberate! (Arun Kumar Chithanar)

2011, Spring, 2 Graduate Research Assistants for coding AGORA: Participate – Deliberate! (Mona Chitnis, Arun Kumar Chithanar)

2011, Spring, 1 undergraduate researcher, supporting the compilation of the AGORA learning material about genetically modified crops (Tyler J. Kaplan).

2010, Spring, Graduate Research Assistant for coding AGORA: Participate – Deliberate! (Karthik Rangarajan)

2009, Fall, graduate research project for coding AGORA: Participate – Deliberate! (Andrew Roberts)

2009, Summer, graduate research project to prepare a grant proposal and to develop a pilot version of a web-based, interactive argumentation tool: NIFPAD – National Ignition Facility for Participatory Democracy

2008, Summer, undergraduate research on controversial issues in public policy: 1 student

2008, Summer, undergraduate research on "Diagrammatic reasoning in cognitive science": 1 student

2008, Spring, advisor for a graduate student and policy analyst at Georgia's Administrative Office of the Courts

2007, Spring, undergraduate research on "Deliberative Decision Making": 1 student

2006, Summer, undergraduate research on "Logical Argument Mapping": 1 student.

2006, Summer, internship advisor for 2 students.

2006, Spring, undergraduate research on "Interreligious Understanding": 10 students

2006, Fall, Undergraduate Research Assistantship for a student who was awarded the President's Undergraduate Research Award (PURA). Project title: "Intelligent design: Documenting a debate about 'What is science?'."

2006, Fall, directed reading course (with letter grade) for one graduate student.

G. Mentorship of visiting scholars

Prof. Dr. Martin J. Eppler, Chair of Communications Management, Director of =mcm institute for media and communications management, University of St. Gallen, Switzerland, February to April 2015.

H. Other teaching activities

2018 – present: Use of the Reflect! platform to further develop the problem-based learning approach described below. The platform has been used, for the first time, in the spring of 2018 in PHIL 3127 Science, Technology, and Human Values.

2016 – present: Directing the VIP Digital Deliberation (the first year together with Prof. Chris Le Dantec, LMC). VIPs, Vertically Integrated Projects, are part of a program at Georgia Tech in which undergraduates work for up to three years for academic credit in multidisciplinary teams with graduate students and faculty on long-term projects, rotating in and out, and following the research trajectory of faculty. The VIP Digital Deliberation played a crucial role in the development of the Reflect! platform.

2010 – present: Development of problem-based learning projects in which the traditional role of the facilitator is replaced by user-guidance realized in the collaborative argument visualization software AGORA-net. These projects (duration between 2 and 6 weeks) were implemented and continuously improved in PHIL 3109 Engineering Ethics, PHIL 2010 Introduction to Philosophical Analysis, PHIL 2025 Philosophical Analysis of Policy Choices, PHIL 4803 Philosophical Analysis with Argument Mapping, and PUBP 6010 Ethics and Epistemology in Public Policy.

2012 – 2013: Member of the team that developed the Graduate Certificate in Science, Technology and Society (STS)

New courses developed:

- PHIL 3127 Science, Technology, and Human Values, fall 2016 to present, focusing on wicked problems
- PHIL 4803 Philosophical Analysis with argument mapping, fall 2015
- PUBP 6748 Social Justice, Critical Theory, and Philosophy of Design, fall 2013

Interdisciplinary collaborations

Prof. Richard Catrambone (School of Psychology) and Dr. Jeremy Lingle (Center for Education Integrating Science, Mathematics, and Computing) on the NSF project “Fostering Self-Correcting Reasoning with Reflection Systems.” Since 2016.

Cognitive Systems Initiative (since 2014): An interdisciplinary group of about 40 people across the Georgia Institute for Technology and the Georgia Tech Research Institute that works on artificial systems that can fulfill cognitive functions. An example is Jill, a virtual teaching assistant, that uses technologies from IBM’s Watson platform and has been implemented in online classes. In this context, I am working in a small group on a project that tries to develop a virtual moderator for digital deliberation.

GVU Center at Georgia Tech (since 2009): About 100 faculty across campus who “imagine and build computing solutions to social, scientific and technical challenges.”

DILAC, the Digital Integrative Liberal Arts Center in Georgia Tech's Ivan Allen College (founded 2016). The Center provides a space in which colleagues from language, media, and communication, economics, history, sociology, international affairs, modern languages, and public policy collaborate to redefine the digital humanities and digital civics.

Center for Ethics and Technology: Since August of 2019, I am serving as the Director of the Center. Since 2012, I had been one of its two co-directors. The Center has 16 Affiliates from across campus. It is dedicated to fostering a culture of critical inquiry and deliberation about ethical issues that

arise in relation to technological systems. The Center has a special focus on helping members of the Georgia Tech campus and beyond to acquire tools for recognizing, analyzing and responding to ethical issues, ranging from matters of research ethics through decision making in professional contexts to consideration of the social and environmental implications of innovation. The Center serves the Georgia Tech community with outreach to alumni, the broader community in and around Atlanta, and scholars and institutions with similar goals around the world.

Profs. Stuart Goldberg (School of Modern Languages, Russian) and Jason Borenstein (Director of Graduate Research Ethics Programs) on the Department of Education project "Promoting Educational and Academic Collaboration between the United States and the Russian Federation by Developing the Web-based Learning Tool AGORA, Developing Engineering Ethics Education and Distance Engineering Laboratories, Sharing Educational Achievements, and by Establishing a Student and Faculty Mobility Program." (2010 – 2015).

Memberships in professional societies

PIN, the Philosophy of / as Interdisciplinarity Network is an initiative that I founded together with Jan C. Schmidt (Hochschule Darmstadt) in 2009. Currently, PIN is additionally directed by Robert Frodeman and Adam Briggle (University of North Texas), and Britt Holbrook (New Jersey Institue of Technology). It comprises about 180 members across the globe (http://pin-net.gatech.edu).

SRPoiSE, the Consortium for Socially Relevant Philosophy of/in Science and Engineering. The Consortium comprises the Center for Knowledge Integration and the Institute of Philosophy at the University of Waterloo, the College of Arts and Letters at Michigan State, the Rock Ethics Institute at Penn State, the John J. Reilly Center for Science, Technology, and Values at the University of Notre Dame, the Center for Values in Medicine, Science and Technology at the University of Texas at Dallas, Center for Science, Ethics & Public Policy and the University of Delaware (http://srpoise.org). After joining SRPoiSE conferences since its inception in 2013, our Center for Ethics and Technology became an institutional member of SRPoiSE in 2017.

ISSA, the International Society for the Study of Argumentation. Conferences are attended by about 400 people.

Service

A. Professional Contributions

A1. Editorial

2018 – present	Member of the Editorial Advisory Board for the journal *Teaching Philosophy.*
2012 – present	Member of the Advisory Board for the book series "SAPERE. Studies in Applied Philosophy, Epistemology and Rational Ethics" (Springer)
2011 – 2012	Leading editor, in collaboration with Jan Schmidt and Nancy Nersessian, of the Special Issue "Philosophy of and as Interdisciplinarity" in Synthese
2009 – present	Creator and administrator of the PIN web page at http://pin-net.gatech.edu
2007 – present	Member of the Editorial Board for the book series "Semiotic Perspectives in the Teaching and Learning of Mathematics" (Springer)

A2. Peer-reviewing

- Peer-reviewing on a NSF program panel (2016-2017)
- Journals for which I provided peer reviews include: Argumentation; Argument and Computation; Journal of Argumentation in Context (JAIC); Informal Logic; Science and Engineering Ethics (JSEE); The Review of Philosophy and Psychology; Social Epistemology; Cognitive Science; Transactions of the C.S. Peirce Society; Journal of Responsible Innovation; Negotiation and Conflict Management Research (NCMR); International Journal for Conflict Management (IJCM); Journal of the Learning Sciences; Educational Studies in Mathematics; Journal für Didaktik der Mathematik (JMD); Mathematical Thinking and Learning; Constructivist Foundations.
- Peer reviewing for conferences: European Conference for Argumentation; European Conference on Information Systems (ECIS2019)
- Publishers for which I reviewed book proposals include: CRC Press/Taylor & Francis Books; Bentham Science Publishers; Rowman & Littlefield.

A3. Organizational

2018, June 4-6	4th Meeting of the Consortium for Socially Relevant Philosophy Of/In Science & Engineering (SRPoiSE), in Atlanta. Main organizer: Justin Biddle
2018, May 31	Chair of the eColloq "Building the Foundational Skills Needed for Success in Work at the Human-Technology Frontier " with Joyce Malyn-Smith and Sarita Pillai as presenters (http://circlcenter.org/ecolloq/)
2017, Dec. 6	Chair of the eColloq "Cyberlearning Tools for Mobile, Community Engaged, and Connected Learning" with Katie Headrick Taylor and Tom Moher as presenters (http://circlcenter.org/ecolloq/)
2017, Oct. 24	Chair of the eColloq "Implicit Learning Assessments & Pedagogical Agents" with Jodi Asbell-Clarke and H. Chad Lane as presenters (http://circlcenter.org/ecolloq/)
2012, Sept. 21-23	4th International Workshop on "Philosophy of/as Interdisciplinarity," together with Jan C. Schmidt, Darmstadt/Germany, and Robert Frodeman and Britt Holbrook, UNT, in Tübingen, Germany
2011, March 7-9	3rd International Workshop on "Philosophy of/as Interdisciplinarity: New Practices of Philosophy: Taking Philosophy beyond Disciplinary Bounds" together with Jan C. Schmidt, Darmstadt/Germany, and Robert Frodeman and Britt Holbrook, UNT, at the University of North Texas.
2010, Sept. 18-21	2nd International Workshop on "Philosophy of/as Interdisciplinarity," together with Jan C. Schmidt, Darmstadt/Germany, and Robert Frodeman and Britt Holbrook, UNT, in Neversdorf/Hamburg
2009, Sept. 28-30	International workshop on "Philosophy of Interdisciplinarity," together with Jan C. Schmidt, Darmstadt University of Applied Sciences, and Alan Porter, Georgia Institute of Technology, at Georgia Tech, Atlanta
2009 – present	Co-founder and Co-Director, with Jan Schmidt, Robert Frodeman, and Britt Holbrook, of PIN – Philosophy of / as Interdisciplinarity Network
2000 – 2004	Initiator and director of the research group "Semiotics in Mathematics Education" within GDM (Ges. f. Didaktik d. Math.)
2003, Sept. 24-26,	Organization of three conferences of the research group "Semiotics in Mathematics Educa-

2001, Sept. 25-27, 2000, Sept. 21-22	tion”
2003, March 3-7	Organization of three workshops at the 37. Tagung für Didaktik der Mathematik, in Dortmund
2001, March 5-9	Organization of a workshop of the research group “Semiotics in Mathematics Education” at the 35. Tagung für Didaktik der Mathematik, in Ludwigsburg

A4. Advisory

2012 – present	Member of the Advisory Board of the Springer series “Studies In Applied Philosophy, Epistemology And Rational Ethics” (SAPERE)
2007 – 2009	Invited Consultant of the “Lisbon Centre of the Image between science and art (LCISA),” Faculdade de Ciências, Universidade de Lisboa, Portugal
1999 – 2005	Member of the Advisory Committee of the *German Society for Semiotic DGS – Deutsche Gesellschaft für Semiotik e.V.*, responsible for the field of mathematics education.

A5. Research outreach

2018, Aug 17	4-hour workshop “Reflective consensus building on wicked problems with the Reflect! platform” at Georgia Tech

B. Public and community service

Creator of the The English Avenue Justice Program, an imitative of the Center for Ethics and Technology (CET). The English Avenue community is Georgia Tech’s poor and distressed neighbor in the West of campus. In collaboration with the Westside Community Alliance, CET develops projects relating to social justice and the ethics of the built environment that are designed in collaboration with partners in the English Avenue community and integrated in regularly offered courses and seminars. The program started in the fall of 2013 with the newly developed Seminar “Social Justice, Critical Theory, and Philosophy of Design.”

Further projects included:

- A collaboration with Safe Routes to School. The development of those routes is conceptualized as a strategy for community development.
- Co-Organizor of the Community Think Tank in English Avenue on Human Development, in a collaboration with the Historic Westside Cultural Arts Council (HWCAC). The Think Tank organized a series of community meetings from November 2013 to May 2015. The Think Tank aimed to offer an open place in the English Avenue neighborhood for the community, and for adjacent communities, on Atlanta’s West Side to explore and deliberate conditions and possibilities of human development for the people living there. The focus was largely on African Americans and others who are marginalized by public and social policies.

C. Campus contributions

C1. Board of Regents

2010, Sept – May 2020	Member of the BOR Philosophy and Religion Advisory Committee, representing Georgia Tech's Philosophy Program

C2. Institute

2018, Aug – July 2021	Elected Member of Georgia Tech's Faculty Executive Board, representing the Ivan Allen College
2015, Sept – Aug 2018	Member of the Academic Faculty Senate, representing the School of Public Policy
2016, Mar 14	Moderator of the debate "Atheism or Christianity: Which makes more sense?" between Dr. Ed Buckner and Dr. Wallace Marshall, hosted by the Georgia Tech student group Why Should I Believe

C3. College

2020, Nov – present	Member of the leadership team of the Ethics, Technology, and Human Interaction Center (ETHIC^{x})
2019, Aug – 2020, July	Director of the Center for Ethics and Technology at Georgia Tech
2018, Aug – 2019, May	Convener of a team (Carol Colatrella, Ruth Yow, Mike Best, Robert Rosenberger) that developed the undergraduate class "Social Justice in the Digital Age."
2013, Aug – 2014, July	Interim Chair of the School of Public Policy
2012, Oct – 2019, Aug	Associate Director of the Center for Ethics and Technology at Georgia Tech
2012, Aug – 2013, May	Convener of a team (Carol Colatrella, Susan Cozzens, Hugh Crawford, Carl DiSalvo, Anne Pollock, Robert Rosenberger) that developed the class "Social Justice, Critical Theory, and Philosophy of Design" for the STS Graduate Certificate.

C4. School

2007, May – July 2013; 2014, Aug – May 2020	Director of the Philosophy Program at Georgia Tech
2015 – 2018	Responsible for the School's OATS Program Assessment for Learning Outcome 2: Critical and Ethical Thinking
2011, Jan – May	Director of the Public Policy Undergraduate Program (BSPP) at Georgia Tech
2011, Mar – 2013, July	Chair of the School of Public Policy's OATS team that is responsible for developing and deploying an instrument for the BSPP program assessment
2008, Aug – present	Member of the Undergraduate Committee
2008, Aug – 2010, July	Faculty Executive Committee (FEC)
2008, Aug – 2009, April	Chair of the SPP Search Committee for "one or more" philosophy positions
2006, May – 2007, April	Chair of the School of Public Policy (SPP) Committee for Strategic Planning 2006-

2007

2005, Oct. – 2006, May	Member of the SPP Search Committee “Philosophy of Technology”
2004, Aug. – present	Organization of the SPP “Philosophy Club”
2004, Aug. – 2006, Apr.	Organization of the “School of Public Policy Research Seminar”

Funded Projects

A. As principal investigator (PI)

Digital guidance for community-engaged student projects. A grant from the Digital Integrative Liberal Arts Center (DILAC) Fund, Ivan Allen College, Georgia Tech, May 2019 to April 2020. **$3,500**. Collaborators: Ruthie Yow, Serve-Learn-Sustain, George Thomas, LMC, and Tracy Woodland, Mad Housers, an NGO in Atlanta.

Digital Deliberation and Social Justice in the Digital Age. A grant from the Digital Integrative Liberal Arts Center (DILAC) Fund, Ivan Allen College, Georgia Tech, August 2018 to May 2019. **$15,000**. Collaborators: Carol Colatrella, LMC, Mike Best (INTA / CS), Robert Rosenberger, PUPB, and Ruthie Yow, Serve-Learn-Sustain

Fostering Self-Correcting Reasoning with Reflection Systems. National Science Foundation (Cyberlearning and Future Learning Technologies, Award 1623419), September 2016 to August 2020. **$549,958**. Collaborators: Richard Catrambone (School of Psychology), and Jeremy Lingle (Center for Education Integrating Science, Mathematics, and Computing)

Digital Deliberation. A faculty grant from the Digital Integrative Liberal Arts Center (DILAC) Fund, Ivan Allen College, Georgia Tech, May 2016 to April 2017. **$19,335**. Collaborator: Christopher Le Dantec (School for Literature, Media, and Communication)

Promoting Educational and Academic Collaboration between the United States and the Russian Federation by Developing the Web-based Learning Tool AGORA, Developing Engineering Ethics Education and Distance Engineering Laboratories, Sharing Educational Achievements, and by Establishing a Student and Faculty Mobility Program. Fund for the Improvement of Postsecondary Education (FIPSE) of the U.S. Department of Education and the Russian Ministry of Education and Science of the Russian Federation. Grant # P116-S10-0006. September 1, 2010, to August 31, 2015: **$399,860**. Collaborators: Stuart Goldberg (Russian), Steve McLaughlin (Vice Provost for International Initiatives), and Jason Borenstein (Director of Graduate Research Ethics Programs)

B. As Co-Principal Investigator (Co-PI) or contributor

Workshop on Assessing Ethics Education Interventions in Science and Engineering. Funded by the NSF program “Cultivating Cultures for Ethical STEM,” March 2019 to March 2020. Total grant: **$49,656** (Award 1835276), GT sub-contract: **$5,963**. PI: James B. Holbrook (New Jersey Institute of Technology); Co-PIs: Adam Briggle (University of North Texas), Michael H. Hoffmann, Michael R. O’Rourke (Michigan State University)**.**

Cross-Cultural, Problem-Based Learning in Business Education. (Funding amount not yet determined). A project funded by the Center for International Business Education and Research (CIBER), a

National Resource Center of Excellence in International Business that is funded by a **$2.6 million grant** from the U.S. Department of Education and the Georgia Institute of Technology (2018 – 2020).

Global Collaborative Learning (GLoCL) Reflect Project for Online Decision-Making Strategies with Foreign Language Content. **$3,000**. This is a contribution to the Atlanta Global Studies Center (AGSC), a National Resource Center and a Foreign Language and Area Studies (FLAS) Fellowship Program funded by a **$2.25 million** grant from the U.S. Department of Education. The AGSC is housed in the Global Studies Institute in Georgia State University's College of Arts & Sciences and the School of Modern Languages in the Ivan Allen College of Liberal Arts at the Georgia Institute of Technology (January to December 2019)

From Big Data to Deep Insights: Using Watson as a Conversational Cognitive System. IDEAS grant, Georgia Institute of Technology, August 2015 to July 2016. **$40,000**. PI: Ashok Goel (Interactive Computing). Collaborators: Rahul Basole (IC), Timothy Boone (GTRI), Daniel Campbell (GTRI), Michael Chang (BBISS), Edward Coyle (ECE), John Crittenden (CEE), Bistra Dilkina (CSE), Jacob Eisenstein (IC), Alex Endert (IC), Sherry Farrugia (IPaT), Karen Feigh (AE), Katherine Fu (ME), Daniel Haynes (CETL), Karl Jacob (MSE), Roger Jiao (ME), David Joyner (OMSCS), Julie Linsey (ME), Wayne Li (ID), Margaret Loper (GTRI), Amanda Madden (C21U), Keith McGreggor (IC), Elizabeth Mynatt (IC), Wendy Newstetter (CoE), Chaohua Oh (CETL), Christian Paredis (ME), Amy Pritchett (AE), Mark Riedl (IC), David Rosen (ME), Spencer Rugaber (CS), Chrissy Spencer (Biology), Eric Schumacher (Psychology), Cassandra Telenko (ME), William Underwood (GTRI), Alan Wagner (GTRI), Marc Weissburg (Biology), Leanne West (GTRI), Elizabeth Whitaker (GTRI), Jeannette Yen (Biology)

Development Proposal for A Modular, Non-Credit Course in Professional Ethics. Funded by Georgia Tech Professional Education, August 2012 to July 2013. **$13,999**. PI: Robert Kirkman (School of Public Policy)

Development and consolidation of the Philosophy of / as Interdisciplinarity Network (PIN-net). Funded by the Udo Keller Stiftung, Neversdorf/Hamburg (Germany): **26.000 Euro plus accommodations** for a workshop in 2010 and a conference in 2012 in Tübingen. PI: Jan C. Schmidt (Hochschule Darmstadt). Collaborators: Robert Frodeman, Britt Holbrook (University of North Texas)

Awards

2017 Gold Star 2 Travel Award ($750). A honorable recognition for the project "Digital Deliberation" at the DILAC Showcase on on April 25th. Awarded by Georgia Tech's Ivan Allen Dean's Chair Fund (Award no. 511000025, May 17).

2011 Gold Star Award in recognition of the highest level of accomplishment in research. Awarded by Georgia Tech's Ivan Allen College of Liberal Arts.

2006 Mouton d'Or award for the article "What you should know to survive in knowledge societies: On a semiotic understanding of 'knowledge'," which appeared in *Semiotica Volume 157*–1/4 (2005). Coauthor: Wolff-Michael Roth (I am first author)

Atlanta, July 4, 2021