

## LIST OF PUBLICATIONS

24.9.2012

**TARJA KNUUTILA****A Peer-reviewed scientific articles**

1. Knuuttila, Tarja and Andrea Loettgers (forthcoming, **2013**), “Synthetic Modeling and the Mechanistic Account: Material Recombination and Beyond”, *Philosophy of Science*.
2. Knuuttila, Tarja and Andrea Loettgers (forthcoming, **2013**), “Varieties of Noise: Analogical Reasoning in Synthetic Biology”, *Studies in History and Philosophy of Science*.
3. Knuuttila, Tarja (in press, **2012**), “Contradictions of Commercialization: Revealing the Norms of Science?” *Philosophy of Science*.
4. Evans, M.R., Grimm, V. Johst, K., Knuuttila, T., de Langhe, R., Lessels, K., Merz, M., O’Malley, M.A., Orzack, S., Weisberg, M., Wilkinson, D., Wolkenhauer, O., and Benton, T.G. (in press, **2012**) “Do Simple Models Lead to Generality in Ecology?”, *Trends in Ecology & Evolution*.
5. Knuuttila, Tarja and Andrea Loettgers (in press, **2012**), “Basic Science Through Engineering: Synthetic Modeling and the Idea of Biology-inspired Engineering”. *Studies in History and Philosophy of Biological and Biomedical Sciences*.
6. Knuuttila, Tarja (in press, **2012**), “Science in a New Mode: Good Old (Theoretical) Science vs. Brave New (Commodified) Science? *Science & Education*.
7. Knuuttila, Tarja and Andrea Loettgers (in press, **2012**), “Synthetic Biology as an Engineering Science? Analogical Reasoning, Synthetic Modeling, and Integration”, in Hanne Andersen, Marcel Weber, and Gry Oftedal (eds.) *The Advent of Systems Biology. The Philosophy of Science in European Perspective*, ESF. Springer.
8. Knuuttila, Tarja (in press, **2012**), “Metamorphoses of Meaning: The Concept of the Ideal from a Semiotic Perspective”, in Alex Levant and Vesa Oittinen (eds.) *Dialectics of the Ideal: Evald Ilyenkov and the Creative Soviet Marxism*. Brill.
9. Knuuttila, Tarja (in press, **2012**) “Kaupallistuneen tieteen normit” [The norms of commodified science], in Ilkka Niiniluoto, Jaakko Kuorikoski and Risto Vilkkko (eds.) *Talous*. Gaudemus.
10. Knuuttila, Tarja and Andrea Loettgers (**2012**), “The Productive Tension: Mechanisms vs. Templates in Modeling the Phenomena”, in Paul Humphreys and Cyrille Imbert (eds.), *Representations, Models, and Simulations*. New York: Routledge, 3-24.
11. Morgan, Mary S. and Tarja Knuuttila (**2012**), “Models and Modelling in Economics”, in Uskali Mäki (ed.) *Philosophy of Economics, Handbook of the Philosophy of Science* (general eds. Dov M. Gabbay, Paul Thagard, and John Woods). Elsevier Science, 49-87.
12. Knuuttila, Tarja and Mieke Boon (**2011**), “How Do Models Give Us Knowledge? The Case of Carnot’s Ideal Heat Engine”, *European Journal for Philosophy of Science* 1(3):309-334.
13. Knuuttila, Tarja (**2011**), “Modeling and Representing: An Artefactual Approach”, *Studies in History and Philosophy of Science*, 42:262-271.
14. Knuuttila, Tarja and Andrea Loettgers (**2011**), “Causal Isolation Robustness Analysis: The Combinatorial Strategy in Synthetic Biology”, *Biology and Philosophy* 26(5):773-791.

15. Knuuttila, Tarja (2011), "In The Grey Area: University Research and Commercial Activity – The Case of Language Technology", in James Dzisah and Henry Etzkowitz (eds.), *The Age of Knowledge: The Dynamics of Universities, Knowledge and Society*. Studies in Critical Social Sciences, Brill, 289-310.
16. Boon, Mieke and Tarja Knuuttila (2011), "Breaking up with Epochal Break: The Case of Engineering Sciences", in Alfred Nordmann, Hans Radder and Gregor Schiemann (eds.): *Science Transformed: Debating Claims of an Epochal Break*. Pittsburgh: University of Pittsburgh Press, 66-79.
17. Knuuttila, Tarja and Jaakko Kuorikoski (2011), "Idealized Representations, Inferential Devices and Cross-Disciplinary Tools: Theoretical Models in Social Sciences", in Ian Jarvie and Jesus Zamora Bonilla (eds.) *The Sage Handbook of the Philosophy of Social Science*. Bodmin: Sage, 530-550.
18. Knuuttila, Tarja (2010) "Scientific Models in Philosophy of Science", *International Studies in the Philosophy of Science*, 24, 437-440.
19. Knuuttila, Tarja (2010), "Some Consequences of the Pragmatic Approach to Representation", in Mauricio Suárez, Mauro Dorato, and Miklós Rédei (eds.) *EPSA Epistemology and Methodology of Science: Launch of the European Philosophy of Science Association, Vol I: Epistemology and Methodology of Science*. Dordrecht: Springer, 139-149.
20. Knuuttila, Tarja (2010), "Not Just Underlying Structures: Towards a Semiotic Approach to Scientific Representation", in Mats Bergman, Sami Paavola, Ahti-Veikko Pietarinen and Henrik Rydenfelt (eds.), *Ideas in Action: Proceedings of the Applying Peirce Conference*. Nordic Pragmatism Network. Helsinki, 190-199.
21. Knuuttila, Tarja and Aki Lehtinen (2010), "Johdanto: Representaatio – Tiedon kivijalasta tieteiden työkaluksi" [Introduction], in Tarja Knuuttila and Aki Lehtinen (eds.), *Representaatio: Tiedon kivijalasta tieteiden työkaluksi*. Helsinki: Gaudeamus, 7-34.
22. Knuuttila, Tarja (2010), "Totuudenmukaisia esityksiä vai monikäyttöisiä välineitä? Mallit tieteellisinä representaatioina" [Truthful representations or versatile tools? Models as scientific representations], in Tarja Knuuttila and Aki Lehtinen (eds.), *Representaatio: Tiedon kivijalasta tieteiden työkaluksi*. Helsinki: Gaudeamus, 331-350.
23. Knuuttila, Tarja (2009), "Isolating Representations vs. Credible Constructions? Economic Modelling in Theory and Practice", *Erkenntnis* 70:59-80.
24. Boon, Mieke and Tarja Knuuttila (2009), "Models as Epistemic Tools in Engineering Sciences: A Pragmatic Approach", in Anthonie Meijers (ed.) *Philosophy of Technology and Engineering Sciences*, Handbook of the Philosophy of Science (general editors Dov M. Gabbay, Paul Thagard, and John Woods). Amsterdam: Elsevier Science, 693-726.
25. Knuuttila, Tarja and Martina Merz (2009), "Understanding by Modeling: An Objectual Approach", in Henk de Regt, Sabina Leonelli and Karl Eigner (eds.) *Scientific Understanding: Philosophical Perspectives*. Pittsburgh: University of Pittsburgh Press, 146-168.
26. Tuunainen, Juha and Tarja Knuuttila (2009), "Intermingling Academic and Business Activities – A New Direction for Science and Universities? *Science, Technology & Human Values* 34:684-704.
27. Knuuttila, Tarja (2008), "Representation, Idealization, and Fiction in Economics: From the Assumptions Issue to the Epistemology of Modelling", in Mauricio Suárez (ed.), *Fictions in*

- Science: Philosophical Essays on Modeling and Idealization*. New York & London: Routledge, 205-231.
28. Tuunainen, Juha and Tarja Knuuttila (2008), "Determining the Norms of Science: From Epistemological Criteria to Local Struggle on Organizational Rules?", in Jussi Välimaa and Oili-Helena Ylijoki (eds.) *Cultural Dimensions on Higher Education*, Springer Verlag, 138-153.
  29. Knuuttila, Tarja (2008), "Models and modeling", in Darity, William A., Jr. (ed.) *International Encyclopedia of the Social Sciences*, 2nd edition. 9 vols. Detroit: Macmillan Reference, 224-226.
  30. Knuuttila, Tarja (2008), "Vain perimmäisillä rakenteilla on merkitystä? Tieteelliset mallit representaatioina ja tiedollisina artefakteina" [Only underlying structures matter? Scientific models as representations and epistemic artefacts] *Ajatus* 65:201-225.
  31. Knuuttila, Tarja, Anna-Mari Rusanen and Timo Honkela (2007), "Self-Organizing Maps as Travelling Computational Templates". *Proceedings of IJCNN 2007, International Joint Conference on Neural Networks*, Orlando, Florida, Aug. 12-17, 1231-1236.
  32. Knuuttila, Tarja (2007), "Language Technological Models as Epistemic Artefacts: The Case of Constraint Grammar Parser", in Gordana Dodig Crnkovic and Susan Stuart (eds.), *Computation, Information, Cognition: The Nexus and the Liminal*. Newcastle: Cambridge Scholar's Publishing, 280-289.
  33. Tarja Knuuttila (2007), "Review on Roger E. Backhouse and Bradley W. Bateman (eds.) 'The Cambridge Companion to Keynes'" *Notre Dame Philosophical Reviews*. <http://ndpr.nd.edu/review.cfm?id=9224>
  34. Knuuttila, Tarja (2006), "From Representation to Production: Parsers and Parsing in Language Technology", *Sociology of the Sciences* 25:41-55.
  35. Knuuttila, Tarja, Martina Merz and Erika Mattila (2006), "Computer Models and Simulations in Scientific Practice", *Science Studies* 19:3-11.
  36. Tuunainen, Juha and Tarja Knuuttila (2006) Akateeminen työ ja tutkimustulosten kaupallistaminen – mahdollon yhtälö? [Academic Work and Commercialization of Research Results – An Impossible Equation?] *Tiedepolitiikka* 2006(3):27-36.
  37. Knuuttila, Tarja and Honkela, Timo (2006), "Questioning External and Internal Representation: The Case of Scientific Models", in Lorenzo Magnani and Riccardo Dossena (eds.), *Computing, Philosophy, and Cognition*. Texts in Philosophy vol. 4. London: King's College Publishing, 209-226.
  38. Knuuttila, Tarja (2005), "Models, Representation, and Mediation", *Philosophy of Science* 72:1260-1271.
  39. Veivo, Harri, and Tarja Knuuttila (2005), "Modelling, Theorizing and Interpretation in Cognitive Literary Studies", in Harri Veivo, Bo Pettersson and Merja Polvinen (eds.), *Cognition and Literary Interpretation in Practice*. Helsinki: Helsinki University Press, 283-306.
  40. Tarja Knuuttila (2005), "Is Representation Really in Crisis?", in Michael Gane and Nicholas Gane (eds.), *Umberto Eco*. London: SAGE (Masters in Modern Social Thought Series), 113-129.
  41. Knuuttila, Tarja and Atro Voutilainen (2003), "A Parser as an Epistemic Artefact: A Material View on Models", *Philosophy of Science* 70:1484–1495.
  42. Knuuttila, Tarja (2003), "Is Representation Really in Crisis?", *Semiotica* 143:95-111.

43. Honkela, Timo, Tarja Knuuttila and Kevin Hynna (2003), "Framework for Modelling Partial Conceptual Autonomy of Adaptive and Communicative Agents", in Richard Alterman and Davide Kirsch (eds.) *Proceedings of the 25<sup>th</sup> Annual Meeting of the Cognitive Science Society 2003*. Boston, MA, 569-574.
44. Knuuttila, Tarja (2002), "Signing for Reflexivity: Constructionist Rhetorics and Its Reflexive Critique in Science and Technology Studies" [52 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 3(3).

## B Non-refereed scientific articles

45. Knuuttila, Tarja (2009), "The Absent Encyclopedia: Meaning-Making According to Umberto Eco", *Proceedings of the 9<sup>th</sup> Congress of the International Association of Semiotic Studies*, Helsinki/Imatra June 11-17, 2007.
46. Johansson, Hanna and Tarja Knuuttila (2008), "Mitä vitriinissä oikein tapahtuu? *Hommage à Holmberg* tieteellisen ja taiteellisen representaation jäljillä" [Whatever happens in a showcase: *Hommage à Holmberg* on the trail of scientific and artistic representation], in Hanna Johansson: *Hommage à Lauri Anttila*. Helsinki: Kuvataideakatemia/ Finnish Academy of Fine Arts, 40-76.
47. Tarja Knuuttila (2007), "Rahan tarjonta ja inflaation kausaatio: Kausaalinen prioriteetti taloustieteellisessä esimerkkitapauksessa" [The supply of money and causation of inflation: A case study on causal priority], in Heta Gylling, Ilkka Niiniluoto ja Risto Vilkkio (toim.), *Syy*. Helsinki: Gaudeamus, 175-188.
48. Knuuttila, Tarja (2006), "Realismi ja representaatio kansantaloustieteessä: Oletusten realistisuudesta mallinnuksen epistemologiaan" [Realism and representation in economics: From the realism of assumptions issue to the epistemology of modelling], in Kakkuri-Knuuttila, Marja-Liisa, Kristiina Rolin & Elina Henttonen (eds.): *Soveltava yhteiskuntatiede ja filosofia*. Helsinki: Gaudeamus, 241-267.
49. Hynnä, Kevin I., Mathias Creutz, Tarja Knuuttila and Timo Honkela (2005), "On Representation of Action within Real-World Situations", in Timo Honkela, Kevin I. Hynnä, Kevin, Krista Lagus and Jaakko Särelä (eds.) *Adaptive and Statistical Approaches in Conceptual Modelling*. Helsinki University of Technology. Department of Computer Science and Engineering, Laboratory of Computer and Information Science. Report A75, 56-70.
50. Knuuttila, Tarja (2005), "Kulttuurin koodista semiosiksen sarastukseen: Umberto Eco semiootikkona", in Tarja Knuuttila and Max Ryyänen (eds.): *Umberto Eco: Teräsmies, James Joyce ja vesinokkaeläin*. Helsinki: Yliopistopaino, 19-54.
51. Knuuttila Tarja (2005), "Subjekti, halu ja *Edellisen päivän saari*", in Tarja Knuuttila and Max Ryyänen (eds.): *Umberto Eco: Teräsmies, James Joyce ja vesinokkaeläin*. Helsinki: Yliopistopaino, 201-229.
52. Knuuttila, Tarja and Ryyänen, Max (2005), "Ainakin neljä Ecoa", in Knuuttila, Tarja and Ryyänen, Max (eds.): *Umberto Eco: Teräsmies, James Joyce ja vesinokkaeläin*. Helsinki: Yliopistopaino, 7-18.
53. Knuuttila, Tarja (2004), "What is a Model a Model of?" In Tarasti, Eero (ed.) *From Nature to Psyche. Proceedings from the Imatra International Congresses on Semiotics in 2001 and 2002*. Helsinki: Acta Semiotica Fennica, 182-191.

54. Knuuttila, Tarja (2003), "The Encyclopedia and Semiosis: An Artifactual Perspective", in Eero Tarasti (ed.): *Understanding/Misunderstanding. Contributions to the Study of the Hermeneutics of Signs*. Imatra: International Semiotics Institute (Acta Semiotica Fennica XVI), 92-102.
55. Knuuttila, Tarja (2003), "Transsendenssi. Nyt: Naturalisoitua ja historiallistettua transsendentaalifilosofiaa". (Sami Pihlström: Kokemuksen käytännölliset ehdot. Kantilaisen filosofian uudelleenarviointia). *Synteesi* 4/2003, 77-80.
56. Knuuttila, Tarja (2002), "Vesinokkaeläimen transsendenssi" *Synteesi* 1/2002, 103 – 105.
57. Knuuttila, Tarja and Max Ryyänen (2002), "Ecoistin elämää" [Life of an Ecoist]. *Synteesi* 1/2002, 80.
58. Knuuttila, Tarja (2002), "Ideologian loput ja alut: Ideologian mahdollisuus/mahdottomuus postmodernissa teoriassa" [The ends and beginnings of ideology: The possibility of ideology in postmodern theory]. *Synteesi* 2/2002, 3-11.
59. Knuuttila, Tarja (2000), "Semiosis and the concept of the ideal", in Vesa Oittinen (ed.), *Evald Ilyenkov's Philosophy Revisited*, Helsinki: Kikimora Publications, 189-204.
60. Knuuttila, Tarja (2000), "Alter Eco – Toisen teema Umberto Econ romaanissa 'Edellisen päivän saari'" [Alter eco – The theme of Other in Umberto Eco's novel 'The island of the day before'] in Eero Tarasti (ed.) *Ymmärtämisen merkit. Samuuden ja toiseuden ikoneja suomalaisessa kulttuurissa*, Helsinki: Acta Semiotica Fennica VIII. ISI, 210-226.

## C Scientific books (monographs, special issues)

61. Gramelsberger, Gabriele, Tarja Knuuttila and Axel Gelfert (eds.) (2012, in press). Special issue: "Philosophical Perspectives on Synthetic Biology", *Studies in History and Philosophy of Biological and Biomedical Sciences*.
62. Knuuttila, Tarja and Aki Lehtinen (eds.) (2010), *Representaatio: Tiedon kivijalasta tieteiden työkaluksi* [Representation: From the foundation of knowledge to a tool of science]. Helsinki: Gaudeamus.
63. Knuuttila, Tarja, Martina Merz and Erika Mattila (2006), Special issue: "Computer Models and Simulations in Scientific Practice", *Science Studies* 19(1).
64. Miettinen, Reijo, Juha Tuunainen, Tarja Knuuttila and Mattila, Erika (2006), *Tieteestä tuotteeksi? Yliopistotutkimus muutosten ristipaineessa*. [From science to commodity: University research in transition]. Helsinki: Yliopistopaino.
65. Knuuttila, Tarja (2005), *Models as Epistemic Artefacts: Toward a Non-Representationalist Account of Scientific Representation*. PhD. Dissertation. Philosophical Studies from the University of Helsinki 8. Vantaa: Edita Prima.
66. Knuuttila, Tarja and Ryyänen, Max (eds.) (2005), *Umberto Eco: Teräsmies, James Joyce ja vesinokkaeläin*. Helsinki: Yliopistopaino.
67. Knuuttila, Tarja and Max Ryyänen (2002), Special issue on Umberto Eco "Monta Ecoa" *Synteesi* 1/2002.

## D Publications intended for professional communities

68. Seppälä, Päivi and Tarja Knuuttila (2012), "Report on Models and Simulations 5, 14-16 June". *The Reasoner* 6(8): August 2012. <http://www.thereasoner.org/>

69. Knuuttila, Tarja (2010), "Monta tietä, sama polku: matkani taloustieteestä semiotiikan kautta tieteenfilosofiksi", in Markku Roinila (ed.), *Miten meistä tuli filosofian tohtoreita*, Helsinki: SFY, 485-491.
70. "Metaphoric metaphors" by Jaakko Hintikka [translated from English to Finnish] (together with Max Ryyänen). *Synthese* 1/2002, p. 80-82.

## E Publications intended for general public, linked to applicant's research

71. Knuuttila, Tarja and Ryyänen, Max (2005), "Ihminen on sitä, mitä hän lukee – vai onko?" (Umberto Eco: Kuningatar Loanan arvoituksellinen liekki, 2005), *WIP-lehti*, WSOY.

## G Theses

72. Knuuttila, Tarja (2005), *Models as Epistemic Artefacts: Toward a Non-Representationalist Account of Scientific Representation*. PhD. Dissertation. Philosophical Studies from the University of Helsinki 8. Vantaa: Edita Prima.
73. Knuuttila, Tarja (2001), *Umberto Eco ja semiotiikan lupaus* [Umberto Eco and the promise of semiotics]. Master's thesis in Social and moral philosophy, University of Helsinki.
74. Knuuttila, Tarja (1991), *Rahan tarjonta ja inflaation kausaatio* [The supply of money and the causation of inflation]. Master's thesis in Economics, Helsinki School of Economics.

## PRESENTATIONS IN INTERNATIONAL WORKSHOPS AND SYMPOSIA (*invited*)

### 2012

- "The Problem of Reflexivity and the Possibility of Constructivist Realism", *New Directions in the Philosophy of Science*, ESF *The Philosophy of Science in a European Perspective* International Conference, Bertinoro, Italy, October 17-20, 2012.
- "Mathematization in Synthetic Biology: Analogies, Templates, and Fictions" (with Andrea Loettgers), *Effectiveness of Mathematization* symposium, Center for Interdisciplinary Research (ZiF), Bielefeld University, Germany, August 9-11, 2012.
- "Synthetic Biology: The Combinatorial Modeling Practice" (with Andrea Loettgers). *Modeling/Modelling* symposium, California Institute of Technology, Pasadena, USA, February 23-24, 2012

### 2011

- "Results-Oriented and Methods-Driven: The Contemporary Modeling Practice", *Modeling in Ecology: Does Simple Always Equate to General?* And exploratory workshop funded by ESF, London, UK, September 15-16.
- "Varieties of Noise: Analogical Reasoning in Systems Biology" (with Andrea Loettgers), *ESF Philosophy of Systems Biology Workshop*, Aarhus University, Denmark, August 18-20, 2011.
- "The Combinatorial Modeling Strategy of Synthetic Biology" (with Andrea Loettgers), *Models, Mechanisms and Algorithms: Symposium on Philosophical Perspectives on Synthetic Biology*, University of Helsinki, Finland, May 2-3, 2011.
- "Synthetic Biology and the Functional Meaning of Noise" (with Andrea Loettgers), *Interdisciplinary Exchanges as the Object of Philosophical Inquiry*, Helsinki Collegium of Advanced Studies, Finland, March 3-4, 2011.

“An Artefactual Approach to Scientific Modeling”, *Modeling/Modelling* symposium, California Institute of Technology, Pasadena, USA, January 6-7, 2011.

## 2010

“Modeling and the Problem of Scientific Representation”, *Order of Nature or Matrix of Man* – symposium, Finnish academy of Fine Arts, Helsinki, Finland, October 15, 2010.

“Comment on Ismo Koponen: Models and Modelling in Physics: From Maxwell to Present Days”, *Models in Physics and Cosmology* – seminar, Tieteiden talo, Helsinki, September 27-28, 2010.

”Comment on Socio-Cognitive Modelling (Timo Honkela)” *Modelling in the Social Sciences: Interdisciplinary Comparison*, Helsinki Collegium of Advanced Studies, June 17-18, 2010.

## 2009

“Modeling and Representing: An Artefactual Approach to Representation”. Guest lecture in the Department of Philosophy, University of Virginia, USA, November 11, 2009.

“How do models give us knowledge?” (with Mieke Boon) *Science Studies Collogium Series*. University of San Diego, USA, October 26, 2009.

## 2008

”How to Approach Model-Based Scientific Practice?” Workshop: *Model-Based Representation in Scientific Practice*. National University of Singapore, September 5-6, 2008.

“Modeling and Representing: How to Approach the Model-Based Scientific Practice”, *Models/Simulations Seminar*, l'Institut d'histoire et de philosophie des sciences et des techniques Université de Paris I, France, June 9-13, 2008.

“Representation, Idealization and Fiction in Economics: From the Assumptions Issue to the Epistemology of Modelling”, *EIPE Research Seminar*, Faculty of Philosophy, Erasmus Universiteit Rotterdam, Netherlands, May 19, 2008.

”Model, Image and Representation: Established interrelationships and possible cross-disseminations”, *The Image as a Model – Das Bild als Modell – seminar*, University of Lucerne, Switzerland, January 31 – February 1, 2008.

## 2006

“Representation and Realism in Economics: From the Assumptions Issue to the Epistemology of Modelling”. Conference on *Scientific Representation: Idealizations, Fictions, Reasons*. Universidad Complutense de Madrid, Spain, February 2-4, 2006.

## 2005

“Models, Machines, Mechanisms: Or, to Know One is to Build One?”. *Mechanisms-workshop*, University of Lund, Sweden, December 12-13, 2005.

“Philosophy of Science Meets STS: The Case of Scientific Models”. *Science, Reason and Society: A symposium on the place of philosophy in the science and technology studies*. Swiss Association for the Studies of Science, Technology and Society. Basel, Switzerland, July 7-8, 2005.

“Models as Epistemic Artefacts”. *Workshop on Models*. Centre for Philosophy of Natural and Social Science, London School of Economics and Social Science. London, UK, March 4, 2005.

## 2004

“From Representation to Production: Parsers and Parsing in Language-Technology”. *International Symposium: Computer Simulation – Practice, Epistemology, and Social Dynamics*. Institute for Science and Technology Studies, Bielefeld University, Germany, June 17-19, 2004.

“Models, representation and mediation”. *Models in science and in the philosophy of science - symposium*, University of Tartu, Estonia, April 22, 2004.

## 2000

“After the Modern: Semiotics as Postmodern Philosophy?”. *Seminar on "Four Ages of Understanding" by John Deely*, Houston. Hommage à Oscar Parland, University of Helsinki, Finland, December 1, 2000.

## PRESENTATIONS IN INTERNATIONAL CONFERENCES AND SYMPOSIA

### 2012

“Synthetic Modeling and the Mechanistic Account: Material Recombination and Beyond” (with Andrea Loettgers), *The Twenty-Third PSA Biennial Meeting*, San Diego, USA, November 15-17, 2012.

“Synthetic Modeling and the Mechanistic Account: Material Recombination and Beyond” (with Andrea Loettgers) *Models and Simulations 5 conference (MS5 2012)*, University of Helsinki, Finland, June 14-16, 2012.

### 2011

“Synthetic Biology and the Functional Meaning of Noise (with Andrea Loettgers), *Society for Philosophy of Science in Practice (SPSP) Third Biennial Conference*, University of Exeter, UK June 22-24, 2011.

“Synthetic Modeling and Functional Meaning of Noise” (with Andrea Loettgers), *Epistemology of Modeling & Simulation*, University of Pittsburgh, USA, April 1-3, 2011.

### 2010

“Contradictions of Commercialization: The Norms of Scientific Research Revealed?” *The Twenty-Second PSA Biennial Meeting*, Montreal, Canada, November 4-6, 2010.

“Modeling and Experimenting: The Combinatorial Strategy in Synthetic Biology” (with Andrea Loettgers) *Philosophy of Scientific Experimentation: A Challenge to Philosophy of Science*. Center for Philosophy of Science, University of Pittsburgh, USA, October 15-17, 2010.

### 2009

“Templates vs. Mechanisms? The Lotka-Volterra Model Reconsidered” (with Andrea Loettgers) *Modeling the World - Perspectives from Biology and Economics*, University of Helsinki, May 28-30, 2009.

“How does fiction help us understanding scientific models? The case of economic modeling” *Models and Fiction Workshop*, Helsinki Collegium of Advanced Studies, May 27, 2009.

“Templates vs. Mechanisms? The Lotka-Volterra Model Reconsidered” (with Andrea Loettgers) *Models and Simulations 3*, Charlottesville, University of Virginia, March 6-8, 2009.

### 2008

“Decoupling the Model-Target Dyad: the Thesis of Indirect Representation and Reverse Reasoning”, *The Twenty-First PSA Biennial Meeting*, Pittsburgh, Pennsylvania, USA, November 6–8, 2008.

“Indirect Representation, Multidisciplinary Templates and Underlying Mechanisms” *Models, Mechanisms, and Interdisciplinarity workshop*, University of Helsinki, Finland, October 31 – November 1, 2008.



“Incredible Models -- Credible Inferences? Economic Modelling in Theory and Practice”, *Models as Isolating Tools or as Credible Worlds?* Workshop, Helsinki, Finland, March 10, 2008.

## 2007

- “Determining the Norms of Science: From Epistemological Criteria to Local Struggle on Organizational Rules?” (with Juha Tuunainen) *ESF/COST Workshop* on “Science and Technology Research in a Knowledge-based Economy”. Katholieke Universiteit Leuven, Belgium, October 18-20, 2007.
- “Determining the Norms of Science: From Epistemological Criteria to Local Struggle on Organizational Rules?” (with Juha Tuunainen) *6<sup>th</sup> International Triple Helix Conference* “Emerging Models For The Entrepreneurial University: Regional Diversities Or Global Convergence”. National University of Singapore, May 16-18, 2007.
- ”The Absent Encyclopedia, or, How to Account for Meaning Making A”, *9<sup>th</sup> Congress of the International Association of Semiotic Studies* “Understanding/Misunderstanding”, Helsinki/Imatra, Finland, June 11-17, 2007.
- “It is Not Just the Underlying Structure that Matters: Towards a Semiotic Approach to Scientific Representation”, *Applying Peirce* conference, Helsinki, Finland, June 11-13, 2007.
- ”Neural Networks as Computational Templates: The Dissemination of Self-Organising Maps across Disciplinary Boundaries”, *Interdisciplinary Relations in the Social and Cognitive Sciences*, Inaugural Conference of TINT, sponsored by the Academy of Finland Helsinki, Finland June 15-16, 2007.
- “Self-Organizing Maps as Travelling Computational Templates” (with Anna-Mari Rusanen and Timo Honkela) *IJCNN 2007, International Joint Conference on Neural Networks*, Orlando, Florida, USA, August 12-17, 2007.
- “Unrealistic models -- credible inferences? Economic modelling in theory and practice”, *First Biennial Conference of Society for Philosophy of Science in Practice SPSP*, Twente, Netherlands, August 23-25, 2007.
- ”Neural Networks as Cross-Disciplinary Computational Templates: the Philosophical Implications of the Dissemination of Self-Organizing Maps” (with Timo Honkela) *Models and Simulations 2*, Tilburg, Netherlands, October 11 – 13 2007
- “Some Consequences of Pragmatism: Whatever Happened to the Notion of Representation in the Philosophy of Science”, *Founding Conference of European Philosophy of Science Association (EPSA)*, Madrid, Spain, November 15-17, 2007.
- “Computational Templates and the Strategy of Model-Based Science”, Symposium on *Modeling, Simulation and Computational Science: Perspectives from different sciences*, Helsinki, Finland, November 29-30, 2007.

## 2006

- “The Double Agenda of STS Constructivism: On the Possibility of Fruitful Dialogue between STS and Philosophy of Science”. *EASST Conference: Reviewing Humanness: Bodies, Technologies and Spaces*, Lausanne, Switzerland, August 23-26, 2006.
- “Combining Academic Work and Business Activity – Squaring the Circle?” *Science Policy Research Unit (SPRU) 40th Anniversary Conference* “The Future of Science, Technology and Innovation Policy” (with Juha Tuunainen) University of Sussex, Brighton, UK, September 11-13, 2006.
- “In Praise of Purposeful ‘Misrepresentation’: Toward a Productive Understanding of Models”. *Twentieth-Biennial Meeting of the Philosophy of Science Association PSA 2006*. Vancouver, British Columbia, Canada, November 2-4, 2006.

“It is All about Adaptation? On the Dissemination of Self-Organising Maps”. *4S Conference: “Silence, Suffering and Survival”*. Vancouver, British Columbia, Canada, November 1-5, 2006.

## 2005

“Model-Based Understanding? An Objectual Approach to Scientific Understanding” (with Martina Merz) *Philosophical Perspectives on Scientific Understanding*, Amsterdam, Netherlands, August 25-27, 2005.

“Combining Academic Work and Commercialization of Research Results – Squaring the Circle?” (with Juha Tuunainen) *Consortium for Higher Education Researchers (CHER), 18th Annual Conference “Higher Education: The Cultural Dimension – Innovative Cultures, Norms and Values”*. Jyväskylä, Finland, September 1-3, 2005.

## 2004

“Questioning External and Internal Representation: The Case of Scientific Models” (with Timo Honkela) *Computing and Philosophy, E-CAP 2004*. Pavia, Italy, June 3-5, 2004.

“Modelling Language: From Representation to Productive Heuristics”. *4S & EASST Conference: Public Proofs: Science, Technology and Democracy*. Paris, France, August 25-28, 2004.

“Models, Representation and Mediation”. *Nineteenth-Biennial Meeting of the Philosophy of Science Association PSA 2004*. Austin, Texas, USA, November 18-20, 2004.

## 2003

“Reconstructing Representation”. *25th Annual Meeting of Cognitive Science Society, (CogSci2003)*, Boston Mass., USA, July 30 - August 2, 2003.

“Causality in Economics: The Supply of Money and the Phenomenon of Inflation”, *12th International Congress of Logic Methodology and Philosophy of Science, LMPS*. Oviedo, Spain, August 7-13, 2003.

“Models as Epistemic Artefacts”, *12th International Congress of Logic Methodology and Philosophy of Science, LMPS*. Oviedo, Spain, August 7-13, 2003.

“Models, Representation and Mediation: A Two-Fold Account of Representation”. *The 27th annual 4S Conference*. Atlanta, USA, October 15-18, 2003.

“Analog Models as Epistemic Artefacts”. *Analog Seminar*, Espoo, Finland, December 11-12, 2003.

## 2002

“Causality in Economics: The Supply of Money and the Phenomenon of Inflation”. *International Congress on Causation and Explanation in Natural and Social Sciences, CENSS 2002*. Ghent, Belgium, May 15-18, 2002.

“A Practice-Oriented Approach to Models”. *Fourth European Congress for Analytical Philosophy, ECAP4*. Lund, Sweden, June 14-18, 2002.

“The Toolness of Signs, The Signnes of Tools: Activity Theory Meets Semiotics”. *Fifth Congress of the International Society for Cultural Research and Activity Theory, ISCRAT 2002*. Amsterdam, Netherlands, June 18-22, 2002.

“A Practice-Oriented Approach to Models”. *Congress of European Association for the Study of Science & Technology, EASST 2002*. York, United Kingdom, July 31 - August 3, 2002.

“A Parser as an Epistemic Artefact: A Material View on Models” (twith Atro Voutilainen). *Eighteenth-Biennial Meeting of the Philosophy of Science Association, PSA 2002*. Milwaukee, Wisconsin, USA, November 7-10, 2002.

## 2001

“Modeling Language: Parser Construction and Evaluation”. *Model-Based Reasoning: Scientific Discovery, Technological Innovation, Values (MBR'01)*. Pavia, Italy, May 17-19, 2001.

“What is a Model a Model of? Modeling as a Key to Understanding Representation”. *International Summer Institute for Semiotics and Structural Studies, ISISSS*. Imatra, Finland, June 10-15, 2001.

“Modeling and Experimentation in Language Technology” (with Aro Voutilainen) *Models as mediating tools – symposium*. Helsinki, Finland, October 4-5, 2001.

## 2000

“Constructing a Parser: Language Technology in the Marchland Between Theory and Practice”. *The Society for Social Studies of Science 4S/EASST European Association for the Study of Science & Technology Conference*. Wien, Austria. September 27-30, 2000.

## 1999

“The Encyclopedia and Semiosis: On the Artefactuality of Encyclopedia”. *International Summer Institute for Semiotics and Structural Studies, ISISSS*. Imatra, Finland, June 11–18, 1999.

“Semiosis and the Concept of the Ideal”. *Symposium on Evald Ilyenkov*. Helsinki, Finland, September 7-8, 1999.

“Tools and Signs: Towards a Marxian Semiotics”. *9th International Congress of the German Society for Semiotic Studies: ”Machines and History”*. Dresden, Germany, October 3-6, 1999.

“On the Concept of the Encyclopedia: An Absent Encyclopedia?” *7th International Congress of the International Association for Semiotic Studies (IASS/AIS): ”Sign Processes in Complex Systems”*. Dresden, Germany, October 6-11, 1999.

## OTHER PRESENTATIONS AND GUEST LECTURES (invited)

“What Kind of Knowledge can be Gained by Modeling Language and Neural Networks?”, *NeuroCafé*, Helsinki University of Technology, Espoo, Finland, November 14, 2008.

”Tieteellisen ’kuvan’ jäljillä”, *Lauri Anttila –seminaari*, Finnish Academy of Fine Arts & Museum of Contemporary Art Kiasma, Helsinki, Finland, April 24, 2008.

”Miksi tutkijanäkökuomilla tieteidenvälisyyteen on merkitystä?” *Tieteiden rajoilla: tieteidenvälisyys ja sen haasteet yliopistoissa* -seminaari, The Finnish Society for Science and Technology Studies & Helsinki Institute of Science and Technology Studies (HIST), Helsinki, Finland, February 26, 2008.

”Representaation kritiikki ja käytännön käsite”. Kulutustutkimuksen seuran syysseminaari 2006: Kuluttajatutkimus. Nyt - Tekeekö raha onnelliseksi? Helsinki, Finland, 9 November, 2006.

”Tieteen ja teknologiantutkimuksen näkökulmia matkailuun”. Matkailu muutoksessa haussa uusi turisti ja hänelle tarjottavat tuotteet – tapahtuma. Imatra, Finland, 7-8 September, 2006.

”Teknologia, kulttuuri ja luonto”. Etelä-Karjalan tiedepäivä, Lappeenranta, Finland, 17 May, 2006.

”Tieteellisen maailmankuvan konstruktivistis-semioottinen kritiikki”. *Studia Semiotica Generalia*, Helsinki, Finland, 27 September, 2004.

”Teknologia: herra, renki vai kumppani”. *Studia Semiotica Generalia*, Helsinki, Finland, 8 December, 2003.

”Tieteen ja teknologian materiaalistuneet arvot”. *Studia Semiotica Generalia*, Helsinki, Finland, 25 March, 2002.