Academic Report / "Sachbericht" (01.01.2015–31.12.2015)

Hannes Leitgeb, April 26th 2016

The *Munich Center for Mathematical Philosophy* (MCMP) had another very good year in 2015 with a lot of activities. As in previous years, we will give two summaries of MCMP activities for 2015: one relating to Hannes Leitgeb's Alexander von Humboldt Professorship and the other one relating to Stephan Hartmann's Alexander von Humboldt Professorship. The present report is only about Hannes Leitgeb's group and the logic-related events, while the more philosophy-of-science-related events would be listed in Stephan Hartmann's report. (Occasionally, there might be some overlap, e.g., when the events in questions were organized jointly.)

Here is the list of selected corresponding activities in 2015, the full details of which can be found on our website at http://www.mcmp.philosophie.uni-muenchen.de/index.html:

(I) We organized various academic events:

Colloquia on Monday and Tuesday:

February:	
2nd: Roland Poellinger (MCMP)	Formal Informal (4th edition) on "Updating and Learning" (joint event with the statistics department)
June:	
8th: Lavinia Picollo (Buenos Aires)	Reference and Disquotation
July:	
6th : Danny November (Jerusalem)	Philosophical Implications of the Probability Space
Kenny Easwaran (California)	Aggregating Utility for Infinitely Many Agents
October:	
26th: Rohit Parikh (CUNY)	Epistemic Logic, Game Theory and Behavior
November:	
2nd: Darren Bradley (Leeds)	A Carnapian Defence of Metaphysics
23rd: Sara Negri (Helsinki)	Proof Analysis for Counterfactual and Conditional Logics
December:	
14th : Steve Awodey (Carnegie Mellon/MCMP)	Cubical Homotopy Type Theory

Colloquia on Wednesday:

October:	
28th: Rohit Parikh (CUNY)	Epistemic Logic, Game Theory and Behavior
November:	
18th: Sara Uckelman (Durham University)	Where are the Medieval Women Logicians?

Colloquia on Thursday:

January:

8th: Irina Starikova (Sao Paulo):	Symmetry and Mathematicians' Aesthetic Proferences:a Case Study
15th: Aviv Keren(Israel)	Logic of Love
Tom Sterkenburg (Amsterdam)	Occam's Razor in Algorithmic Information Theory
22nd: Catarina Dutilh-Novaes (Groningen)	A Dialogical Analysis of Structural Rules
Otavio Bueno (Miami)	Logic and Metaphysical Presuppositions
29th: Vasco Brattka (Universität der Bundeswehr München)	A Computational Perspective on Metamathematics

March:

5th: Roberto Fumagalli (MCMP)	On the Neural Enrichment of Economic Models: Recasting the Challenge
19th: Shawn Stendefer (Pittsburgh)	Towards Non-Classical Approaches to Circular Definitions

April:

16th: Sam Sanders (MCMP)	On the Contingency of Predicativism
23rd: Alexander Paseau (Oxford)	Capturing Consequence
Jack Woods (Bilkent)	Revision and Logical Neutrality (or, a Plea for Ecumenical Reasons)
30th: Denis Bonnay (Paris)	An Axiomatization of Individual and Social Updates

May:

07th: Paolo Busotti (San Marino in Storia della Scienza)	Giuseppe Veronese: The Fascination of Infinity
21st: Theresa Kouri (Ohio State University)	Connective Meanings in Beall and Restall's Logical Pluralism
28th: Alexandra Zinke (Konstanz)	Against Grue Mysteries

June:

11th: Jose Ferreiros (Sevilla)	A Hypothetical Conception of Mathematics in Practice
JC Beall (Connecticut)	Trivializing Sentences and the Promise of Semantic Completeness
25th: Thomas Ede Zimmermann (Frankfurt)	Fregean Compositionality
Dirk Kindermann (Graz)	Context, Conversation, and Fragmentation

July:

2nd: Tim Button (Cambridge)	The Self in Carnap's Aufbau
Koji Nakatagowa (Tokyo)	Applications of Substructural Logics and the Status of Logical Laws.
9th: Georg Schiemer (Wien)	Geometrical Roots of Model Theory: Duality and Relative Consistency
Mihir Chakraborty (Kolkata)	Introducing theory of graded consequence.
16th: Thomas Schindler (MCMP)	Toward Type-Free Theories of Classes
John Wigglesworth (MCMP)	Mathematical Structuralism and Metaphysical Dependence

November:

05th: Arthur Pedersen (Max Planck Institute/MCMP)	Admissible Decisions, Permissive Previsions
12th: Walter Dean (Warwick)	Mathematical Existence, the Completeness Theorem, and the Origins of Reverse Mathematics
Lev Beklemishev (Moskau)	Positive Reflection Calculi
19th: Jan Heylen (Leuven)	Counterfactual Theories of Knowledge and the Notion of Actuality
26th: Sam Sanders (MCMP)	The Unreasonable Effectiveness of Nonstandard Analysis
Vincenzo Crupi (Turin)	Gini vs. Shannon: The Case for Quadratic Entropy in Formal Philosophy of Science

December:

3rd: Ole Hjortland (Bergen/MCMP)	Anti-Exceptionalism about Logic
17th: Ethan Jerzak (Berkeley)	Non-Classical Knowledge

Workshops 2015:

Workshop on Truth: Partial vs Classical Theories, and Coding, November 13th.

Workshop: On Formalizing Natural Language, December 19th.

(II) We hosted LMU faculty, doctoral fellows, postdoctoral fellows, junior visiting fellows, and senior visiting fellows at our Center.

In particular, this is the list of junior and senior visiting fellows at the MCMP during some period in 2015:

09.08.2014 –31.10.2015: Stanislav Speranski (Sobolev Institute of Mathematics)

31.03.2015- 31.12.2015: Roberto Fumigalli (University of Bayreuth)

02.03.2015 – 31.05.2015: Matthias Unterhuber (MCMP)

02.03.2015 – 29.04.2015: Salvatore Florio (Kansas)

29.04.2015 – 27.05.2015: Teresa Kouri (Ohio)

30.04.2015 – 30.07.2015: Tim Button (University of Cambridge)

06.05.2015 –30.09.2015: A.W.Carus (USA)

01.08.2015 – 31.12.2015: Paul Pedersen (Berlin)

01.10.2015 – 31.12.2015: Ethan Jerzak (Berkeley)

(III) Some of the members of the MCMP (with non-permanent positions) have secured permanent positions elsewhere:

- Our MCMP Doctoral Fellow (and now fellow at Cambridge) Catrin Campbell-Moore will take up a permanent position as a lecturer at the University of Bristol from September 2016.
- Our MCMP Assistant Professor Florian Steinberger took up a permanent position as a lecturer at Birkbeck College London in 2015.

(IV) For reasons of space, when we now turn to a detailed description of the academic activities of the academic members of the MCMP in 2015, we will not mention their teaching activities and which students they supervised.

Albert J.J. Anglberger

1. Type of Affiliation with the MCMP

Albert Anglberger worked at the MCMP between 01.01.2015 and 30.09.2015 on the basis of an LMU Research Fellowship.

2. Research Projects

Deontic Logic:
(A1) Albert Anglberger and his collaborator develop an exact truthmaker semantics for explicit permission and obligation. The idea is that with every singular act, one may associate a sphere of permissions and a sphere of requirements: the acts that are rendered permissible and the acts that are rendered required by the act. They propose the following clauses for explicit permissions and obligations:
• a singular act is an exact truthmaker of PA (it is permitted that A) iff every exact truthmaker of A is in the sphere of permissibility of the act, and
• a singular act is an exact truthmakerof OA (it is obligatory that A) iff some exact truthmaker of A is in the sphere of requirements of the act.
They show that this semantics is hyperintensional, and that it can deal with some of the so-called paradoxes of deontic logic in a natural way. Finally, they give a sound and complete axiomatization of the semantics.
(A2) They introduce a new understanding of deontic modals that they call obligations as weakest permissions. They argue for its philosophical plausibility, study its expressive power in neighborhood models, provide a complete Hilbert-style axiom system for it and show that it can be extended and applied to practical norms in decision and game theory.

Many-valued Logic:
(A3) This paper deals with the axiomatizability problem for the matrix-based logics *RMQ*- and *RMQ**. Albert Anglberger presents a Hilbert-style axiom system for *RMQ*-, and a quasi-axiomatization based on it for *RMQ**. He further compares these logics to different well-known modal logics, and assesses its status as relevance logics.

3. Academic Output

Publications:
(A1) *An Exact Truthmaker Semantics for Explicit Permission and Obligation* (with J. Korbmacher & F. Faroldi), submitted
(A2) *Obligation, Free Choice and Logic of Weakest Permissions* (with O. Roy & N. Gratzl), in *The Review of Symbolic Logic*, Volume 8, Issue 04, December 2015
(A3) *Hilbert-Style Axiom Systems for the Matrix-Based Logics RMQ- and RMQ** (with J. Lukic), in *Studia Logica*, October 2015, Volume 103, Issue 5, October 2015

Talks:
(T1) The Open Reading of Permission and its Logic(s), *Formal Methods and Science in Philosophy,* Dubrovnik, March 2015

Further activities:
Conferences organized
(K1) *Formal Ethics 2015*, Bayreuth, July 2015
Website: http://www.formal-ethics.net
(K2) *Salzburg Conference for Young Analytic Philosophy (SOPhiA 2015)*, Paris-Lodron-Universität Salzburg, September 2015
Website: http://www.sophia-conference.org

Editorial Work
- THE REASONER (board member)
- KRITERION

Steve Awodey

1. Type of Affiliation with the MCMP

Steve Awodey is an external fellow of the MCMP who spends some time here every year. In 2015 he spent the period of December 1 – 31 at the Center based on MCMP funding (as a recurring Senior Visiting Fellow).

2. Research Projects

Professor Awodey pursued research into the philosophical foundations of homotopy type theory, a new system of logic and foundations of mathematics. He also collaborated with some of our MCMP doctoral students on higher-order modal logic, and discussed with MCMP fellows questions in the philosophy of mathematics.

3. Academic Output

Professor Awodey have one talk at the MCMP during his stay, as well as a follow-up talk at Carnegie Melon University in February 2016.

Catrin Campbell-Moore

1. Type of Affiliation with the MCMP

Catrin Campbell-Moore was an MCMP Doctoral Fellow until September 2015 (funded by the MCMP) and was a regular visitor from October onwards.

2. Research Projects

Catrin Campbell-Moore's research primarily falls in the broad research categories of philosophical logic and formal epistemology.

During 2015 Catrin Campbell-Moore was primarily finishing up writing her PhD thesis, entitled “Self-Referential Probability”. The thesis studies frameworks where there are sentences that say something about the probability of themselves. These sentences can be used to model situations where someone's attitudes, in particular their degree of belief, affect the truth of the very thing they have an attitude towards.

In Catrin Campbell-Moore's thesis two main questions are considered: “How can one develop a formal semantics for this framework?” and “What rational constraints are there on an agent once such expressive frameworks are considered?”

The work in the thesis that was specifically done in 2015 was:
Firstly: a comprehensive study of this second question regarding rational requirements, which extends the work published in “Rational Probabilistic Incoherence? A Reply to Michael Caie”.
Secondly: a broader view of the project, an analysis of why the approaches that are taken are required, and initial work on an account of how the formal considerations connect to real-world examples.

And thirdly: the development of the philosophical account behind the imprecise probabilities "solution" to the challenge of undermining probability sentences, or probabilistic liars.

3. Academic Output

Thesis completed:
Self-Referential Probability, submitted September 2015. (Defended 2016.)

Publications:
"How to Express Self-Referential Probabilities. A Kripkean Proposal", *Review of Symbolic Logic*, 8.04 (2015).
"Rational Probabilistic Incoherence? A Reply to Michael Caie", *Philosophical Review*, 124.3 (2015).

Talks Given:
The Role of the Higher Infinite in Mathematics and Other Disciplines, Cambridge *'The Revision Theory of Probability'*, invited
Philosophy of Science Seminar, Cambridge *'Imprecise Probabilities and the Probabilistic Liar',* invited
Bridges 2, Rutgers, New Brunswick *'Self-Referential Probability'*, invited
Mathematical Objectivity by Representation. CLMPS. Helsinki *'Structuralism Based on a Computable Infinitary Logic'*
Self-prediction in Decision Theory and AI, Cambridge *'Rational Requirements and Self-Reference'*, peer-reviewed
Epistemic Utility of Imprecise Credence, Bristol '*Imprecise Probabilities and the Probabilistic Liar*', invited
Reasoning Club, Manchester *'Rational Requirements and Self-Reference'*, peer-reviewed
Formal-Informal IV: Updating and Learning, Munich '*Don't Conditionalize'*

Other:
Editorial and interview with Robbie Williams in *The Reasoner* Vol 9 (5) (2015).

Job offers:
Awarded a 3-year stipendiary research fellowship at Corpus Christi College (started in October 2015).
Offered a lectureship at Bristol University, which I will take up in September 2016.

Teaching:
Tutor for Introduction to the Philosophy of Science (taught by Hartmann)

Reading groups:
Organising the Formal Epistemology reading group (joint-organised with Seamus Bradley) at the MCMP.
Attendee of the Formal Epistemology online reading group (organised by Greg Gandenberger) reading Richard Pettigrew's "Accuracy and the Laws of Credence", which was a continuation of the MCMP reading group after some of the attendees left Munich.

Services to the Profession:
Member of the Editorial Board for The Reasoner
Referee for: *Philosophy of Science*, *Erkenntnis*, *Review of Symbolic Logic*, *The Reasoner*.

André W. Carus

1. Type of Affiliation with the MCMP

André Carus spent the period from 1 May through 31 August 2015 at the MCMP, largely self-funded, with some limited support from the Hegeler Institute (LaSalle, IL, USA).

2. Research Projects

His research projects concerned:
(a) a detailed reconstruction, based on Rudolf Carnap's diaries of the early 1920s and other archival documents, of the impact of Husserl and his circle on Carnap's *Aufbau*, and the question why Carnap dropped the phenomenological basis of his system in 1924, while retaining Husserl's general idea of "bracketing" the ultimate reference of perceptual concepts;

(b) the introduction to, and final publication details of, an archival document by Carnap "On Value Concepts" that I had transcribed from Carnap's shorthand;

(c) a more general reconstruction of a model of Carnap's metaphilosophy and Carnapian rationality based partly on that archival document;

(d) continued collaboration with economists and economic historians in the development of a theory of institutional systems (on the model of ecosystems in biology), to address the question of the parameters required for application of micro-economic theory to markets in a particular society.

3. Academic Output

Articles:

(a) "Carnap and Phenomenology: What Happened in 1924?" in C. Damböck, ed. *Influences on the* Aufbau, *Vienna Circle Institute Yearbook* 18 (2016), pp. 137-62.

(b) "Carnapian Rationality," forthcoming in *Synthese*.

(c) Carnap, Rudolf "Value Concepts (1957)" transcribed from Carnap's shorthand, translated, edited and with an introduction by A.W. Carus, forthcoming in *Synthese*.

(d) (with Hannes Leitgeb) "Rudolf Carnap" forthcoming in *Stanford Encyclopedia of Philosophy*.

(e) (with Tracy Dennison) "Serfdom and the European Marriage Pattern," not yet submitted.

(f) (with Tracy Dennison) "Institutions and European Marriage Patterns," not yet submitted.

Talks:

(g) "Carnap's Metaphilosophy" at Congress of Logic, Methodology, and Philosophy of Science, Helsinki, August 2015.

Other activities:

André Carus
(a) maintained, wrote posts for, and replied to comments on posts to, the Carnap Blog.

(b) worked with the editor of *The Monist* to formulate a call for papers for a special issue of the journal on Carnap's Metaphilosophy; invited a few philosophers to write papers for this issue.

(c) worked on final stages transferring the rights of the collected works of Rudolf Carnap to Oxford University Press, issuance of volume-editor contracts, and moving the publication along (finally announced on Carnap Blog on 6 April 2016).

(d) worked on translations and editorial notes for volume 1 of this edition, of which I am a co-editor.

(e) as a trustee of the Hegeler Institute, proprietor of *The Monist*, participated in identifying candidates to succeed the editor through 2015, Barry Smith, interviewed candidates, consulted widely with other philosophers (including Hannes Leitgeb), and chose Fraser Macbride (University of Glasgow) as the new editor (from 2016).

(f) worked with the editors of the collective blog History and Philosophy of the Language Sciences to formulate and outline a target post for discussion in June 2016 on "Language as an Institution."

Jake Chandler

1. Type of Affiliation with the MCMP

Jake Chandler was a Research Fellow at the MCMP between January 1st 2015 and October 1st 2015, funded by MCMP funds.

2. Research Projects

During that period, his work focused mainly on a number of issues pertaining to the foundations of a model of rational belief / database change known as the `*AGM model*'. This work was carried out jointly with Richard Booth, Lecturer in Computer Science at the University of Cardiff.

More specifically, he focused on the most pressing issue facing this model: the so-called problem of *iterated belief change*, i.e. of specifying the global repercussions on one's corpus of beliefs of a sequence of local changes to that corpus (these changes being either additions of beliefs, aka `revisions', or removals of beliefs, aka `contractions'). The first issue addressed was the question of whether, as has been assumed to date, the behaviour of one's corpus under iterated revisions is determined by its behaviour under various single revisions. The possibly surprising answer to this was found to be `no'. The second issue addressed was whether one could recover various recent proposals for constraints on iterated contractions from existing constraints on iterated revision via a suitable extension of a principle known as the `Harper Identity'. The answer to this was found to be `yes'.

In addition, Jake Chandler started work with Paul Pedersen on a survey article on *descriptive decision theory*, commissioned for the *Stanford Encyclopaedia of Philosophy*.

3. Academic Output

The research undertaken on the AGM model during the relevant period provided the bulk of the material for two co-authored papers, later completed after having been hired as Lecturer in Philosophy at La Trobe University, Melbourne. That is:

J. Chandler & R. Booth (in press a): 'The Irreducibility of Iterated to Single Revision'. *Journal of Philosophical Logic*. Available at http://goo.gl/nguPKG.

J. Chandler & R. Booth (in press b): `Extending the Harper Identity to Iterated Belief Change'. *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI 2016).* Available at http://goo.gl/nguPKG

An expanded and revised version of the second article is currently under preparation for submission to the journal *Artificial Intelligence*.

During the relevant period, Jake Chandler also completed and submitted a major grant application for an Australian Research Council (ARC) Discovery Project (DP16). The application was ranked highly but was ultimately unsuccessful. He has recently submitted an updated version of the same material for the 2017 round of Discovery Project competition (DP17) as well as a modified and updated version for the 2016 ARC Future Fellowship competition. The MCMP is nominated as a host institution in the Future Fellowship application.

Vincenzo Crupi

1. Type of Affiliation with the MCMP

Vincenzo Crupi is an external fellow of the Center who spends some time at the MCMP every year. In 2015 he was at the MCMP for part of November (based on MCMP funding).

2. Research Projects

His work in this period included: (i) theoretical explorations of the connections between Bayesian confirmation theory and key notions in information theory, such and entropy, scoring rules, and related concepts; (ii) new investigations about the relevance of judgments of evidential impact in human reasoning under uncertainty; and (iii) a survey discussion of how cognitive biases may affect error in medicine.

3. Academic Output

Articles:

Crupi V. and Tentori K. (2016)
Noisy probability judgment, the conjunction fallacy, and rationality: Comment on Costello and Watts (2014)
Psychological Review, 123, pp. 97-102

Tentori K., Chater N., and Crupi V. (2016)

Judging the probability of hypotheses vs. the impact of evidence: Which form of inductive inference is more accurate and time-consistent?
Cognitive Science, 40, pp. 758-778

Elia F., Aprà F., Verhovez A., and Crupi V. (2016)
First, know thyself: Cognition and error in medicine
Acta Diabetologica, 53, pp. 169-175

Crupi V. (2016)
Inductive logic
Journal of Philosophical Logic, 44 (The Fortieth Anniversary Issue), pp. 641-650

Cevolani G. and Crupi V. (2015)
Subtleties of naïve reasoning: Probability, confirmation, and verisimilitude in the Linda paradox
In M. Bianca and P. Piccari (eds.), *Epistemology of Ordinary Knowledge*, Cambridge Scholars, pp. 211-230

INVITED TALKS:
Errore e organizzazione: perché sbagliamo?
Regional Congress of the Italian Society of Emergency Medicine (SIMEU)
Casale Monferrato, March 4, 2016
Gini vs. *Shannon*: *The case for quadratic entropy in formal philosophy of science*
Entropy Workshop
Ludwigsburg, February 16, 2016
Razionalità, cognizione ed evidenza in medicina clinica
Conference *Filosofia e medicina*, University of Turin
Circolo dei Lettori, January 22, 2016
A logic of inductive conditionals: Why we need it and how to get it
First Workshop of the European Non-Categorical Thinking Project
Leeds, January 20, 2016
Gini vs. *Shannon: The case for quadratic entropy in formal philosophy of science*
Seminar Series, Munich Center for Mathematical Philosophy, Ludwig Maximilians University
Munich, November 26, 2015
Limiti del ragionamento clinico (with F. Elia)
International Congress of the Italian Society of Internal Medicine
Rome, October 12, 2015
Judgments of conditional probability vs. evidential support
An experimental comparison in accuracy and time-consistency
Bridges 2 Workshop
Rutgers Philosophy Department, September 20, 2015
One, but not the same: Bayesian confirmation theories and their implications
PhD Seminar Series, University of Rome TRE
Rome, May 13, 2015
Il ragionamento nella diagnosi
Workshop *Le ragioni degli esami: aspetti filosofici e psicologici della diagnostica per immagini*
Bertinoro, April 24, 2015
Likelihood principles and the grammar of Bayesian confirmation (with G. Cevolani and R. Festa)
Conference *Model selection: Ockham's razors and related issues*
Padova, April 15, 2015

REFEREED CONFERENCE CONTRIBUTIONS:
Crupi V., Nelson J.D., Meder B., Cevolani G., and Tentori K.
Shannon and beyond: Generalized entropies and rational information search
Conference of the European Philosophy of Science Association
Düsseldorf, September 23, 2015
Crupi V., Nelson J.D., Meder B., Cevolani G., and Tentori K.
Beyond Shannon entropy: A Unified mathematical framework for entropy measures and its importance for understanding human active learning [poster]
Biennal Conference on Subjective Probability, Utility, and Decision Making
Budapest, August 16-20, 2015
Crupi V., Nelson J.D., Meder B., Cevolani G., and Tentori K.
How a unified mathematical approach to entropy can help us understand human intuitions and design better experiments
Workshop on *Optimal experimental design*, Annual Conference of the Cognitive Science Society
Pasadena, July 22, 2015
Nelson J.D., Crupi V., Meder B., Cevolani G., and Tentori K.
Beyond Shannon entropy: A Unified mathematical framework for entropy measures and its importance for understanding human active learning
Annual Meeting of the Society for Mathematical Psychology
Newport Beach, July 20, 2015
Crupi V., Nelson J.D., Meder B., Cevolani G., and Tentori K.
Shannon and beyond: Generalized entropies and rational information search
Seventh International Conference on Model-Based Reasoning
Sestri Levante, June 26, 2015

ORGANIZATION OF EVENTS:
Workshop *Categorization, language, and inductive learning*: *Theoretical and experimental perspectives*
Center for Logic Language and Cognition, University of Turin, March 10, 2016
organizer (with Valentina Gliozzi)
13th Annual Formal Epistemology Workshop (FEW 2016)
University of Groningen, June 20-22, 2016
member of the international scientific committee
Conference *Evidence, inference, and risk*
Munich Center for Mathematical Philosophy, Ludwig Maximilian University
Munich, March 31 – April 2, 2016
member of the international program committee
Workshop *Modelli della spiegazione: Logica, scienza, cognizione*
Scuola Superiore di Studi Umanistici, Bologna, October 21, 2016
member of the scientific committee
Symposium *Measure sensitivity in the study of reasoning and cognition*
Conference of the European Philosophy of Science Association
Düsseldorf, September 23, 2015
organizer (with Gustavo Cevolani)
Symposium *Measure sensitivity and robust model-based argumentation in the study of reasoning and cognition*
Seventh International Conference on Model-Based Reasoning
Sestri Levante, June 26, 2015
organizer (with Gustavo Cevolani and Roberto Festa)
Conference *Causal and probabilistic reasoning*
Munich Center for Mathematical Philosophy, Ludwig Maximilian University

Munich, June 18-20, 2015
member of the international scientific committee
Workshop *Information, search, and causes: Rational and cognitive approaches*
Center for Logic, Language, and Cognition – University of Turin
Turin, February 6, 2015
organizer

Daniel A. Di Liscia

1. Type of Affiliation with the MCMP

During January 1st and December 31st 2015 Daniel Di Liscia worked at the MCMP with two different sources of funding for two different research projects. The first one, "From a logic-mathematical standpoint: Richard Swineshead and the calculators tradition" (applicants: Hannes Leitgeb/Daniel A. Di Liscia) was supported by LMUexcellent (until September). The second one, "Die Geometrisierung der Metaphysik im Spätmittelalter: Jacobus de Neapoli und die Tradition *De perfectione specierum"* is a project funded by the DGF for a period of 36 months and started immediately after the conclusion of the first one.

2. Research Projects

Both projects are historical projects with similarities concerning the method and the general subject matter (hence both are called "Calculatores Project"), but with different goals and specific questions in each case. During 2015 the research was concentrated on two main aspects: (1) the empirical tasks related to the documents (mostly hard reading manuscript sources from the late Middle Ages), i.e. localization, description and transcription of the new texts, and (2) the classification and interpretation of them, mainly according to three groups: (a) the late medieval discussions on maxima et minima; (b) the incorporation of several mathematical notions in commentaries to the Aristotelian *Physics* and (c) the application of geometry to metaphysical and even theological issues.

Parallel to the main research activities that Daniel Di Liscia has done in the fields covered by his projects, he kept on doing some minor work in the field of the history of Renaissance mathematics and astronomy, a field on which he has been working for a long time, as well.

3. Academic Output

The work on the above mentioned field (c) made possible the production and consequently successful application of the new research project (DFG) and two further publications he is finalizing now (to be submitted during the next three months): 1) The *Latitudines breves* and the late medieval university teaching (to be submitted to *SCIAMVS*); 2) The latitude of forms as a middle science (to be submitted to *Vivarium*).

Publications:

2015a, "Der Kommentar des Johannes Rucherat de Wesalia zur aristotelischen *Physik*: Seine Bedeutung und Überlieferung", in: *Codices manuscripti et impressi* 99/100, pp. 9-28.

2015b, "Keplers kosmologische Revolution und die Entfaltung des Raumes in der Spätrenaissance", in: *kunstpapiere # 4* (Schafhof – Europäisches Künstlerhaus Oberbayern), pp. 3-24.
2015c, Review of: Werner Diederich, *Der harmonische Aufbau der Welt. Keplers wissenschaftliches und spekulatives Werk*, Hamburg: Felix Meiner Verlag, 2014, in: *Renaissance Quarterly* 68.4.

2015d, Substantive revision of the entry "Johannes Kepler", in: E. Zalta (ed.), *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu), ca. 35 pp.
2016 (forthcoming) Review of: Paolo d'Alessandro et Pier Daniele Napolitani, *Archimede Latino. Iacopo da San Cassiano e il* Corpus *Archimedeo alla metà del Quattrocento. Con edizione della* Circuli dimensio *e della* Quadratura parabolae, Paris: Les Belles Lettres, 2012, accepted in: *Archives internationales d' Histoire des sciences* 66.
2016 (forthcoming): "Carl Prantl y la historia de la lógica de la investigación científica: Una traducción anotada de su conferencia *Galileo y Kepler como lógicos*". In collaboration with Javier Legris. Submitted to *Scientiae Studia*.

Further activities:

In the attempt to develop the conditions for a potential future "Forscher-Gruppe" (DFG) Daniel Di Liscia organized during the whole year 2015 a first reading group with six participants about different subjects in the history of mathematical philosophy. This group continues now with a focus on Plato's *Timaios*. At the same time, this initiative led to the organization of two further groups: one, in which they are preparing a translation of, and introduction to, Albert the Great's commentary on the *Elements* by Euclid and, another, which is institutionally more interesting, consisting in a collaboration between the MCMP (represented by Daniel Di Liscia) with the *Lehrstuhl für Geschichte der Naturwissenschaften* (represented by Dr. Nikolaus Egel). The aim of this group, which was initiated under the name "Naturwissenschaft und Naturgeschichte im Mittelalter" is to provide a more formal context for exchange between both institutions with respect to the medieval trends in philosophy of mathematics. The organization of a first local workshop is envisaged for the first year of activity.
Furthermore, during the second half of the year Daniel Di Liscia started the first negotiations for a workshop to be organized in September/October 2017 at MCMP and for a later collaboration in the research of the "calculatores" tradition. He contacted two colleagues from Poland (University of Łódź: Elżbieta Jung and Robert Podkonski), one from Austria (Edit Luckas) and one from England (Cambridge: Richard Oosterhoff), all of whom were glad to hear that a large calculators project at a European level could be developed under the general coordination of the MCMP.

Catarina Dutilh-Novaes

1. Type of Affiliation with the MCMP

Catarina Dutilh-Novaes is an annually recurring external fellow of the MCMP. In 2015 she spent time at the center in January (based on MCMP funding).

2. Research Projects and 3. Academic Output

Lectures :

All invited, except those marked with *

1. Reductio proofs from a dialogical perspective. Philosophy of mathematics colloquium, Nancy (December 14, 2015).
2. Mathematical proofs: between orality and writing. Enactivism workshop, Rotterdam (December 8, 2015).
3. A dialogical, multi-agent account of the normativity of logic. Inferentialism workshop, Arché, St. Andrews (November 26, 2015).
4. The Phylogeny and Ontogeny of Deductive Reasoning: a Cultural Story. The Cognitive Basis of Logico-Mathematical Knowledge workshop, Bergen (November 16, 2015).
5. Carnapian explication as an ameliorative project: logic and social change. LOGOS, Barcelona (October 28, 2015).
6. Carnapian explication as an ameliorative project: logic and social change. Keynote lecture at Department Day, Tilburg (October 13, 2015).
7. Reductio proofs from a dialogical perspective. Mathematics Colloquium, Groningen (September 29, 2015).
8. * A dialogical analysis of structural rules. GAP9, Osnabrück (September 17, 2015).
9. * What does it mean to say that a mathematical proof is beautiful? CLMPS, Helsinki (August 7, 2015).
10. Axiomatizations of arithmetic, the first-order/second-order divide, and logical pluralism. Dubrovnik, workshop on logical pluralism (June 17, 2015).
11. Reductio proofs from a dialogical perspective. Leeds, HPS Centre seminar series (May 27, 2015).
12. Virtuous adversariality as a model for philosophical inquiry. Durham, workshop on virtuous adversariality (May 26, 2015).
13. The definition of the syllogism according to Aristotle, Ockham, and Buridan. Workshop on Ockham and nominalism, UQAM, Montreal (May 2, 2015).
14. Reasoning biases and non-monotonic logics: the case of preferential logics. UQAM, Montreal (April 30, 2015).
15. Reductio proofs from a dialogical perspective. McGill, Montreal (April 29, 2015).
16. Reasoning biases and non-monotonic logics: the case of preferential logics. Modeling Minds workshop, Nijmegen (April 23, 2015).
17. Mathematical proofs: between orality and writing. Conference 'Representation and axiomatization: power and limits', Paris (March 19, 2015).
18. Mathematical proofs: what are they, and why do we bother producing them at all? Axioma Mathematics Symposium, Groningen (March 11, 2015).
19. A dialogical analysis of structural rules. MCMP, Munich (January 22, 2015).
Appointments & accolades

Appointed (junior) full professor at the Faculty of Philosophy, University of Groningen.
Appointed member of the editorial board of the *British Journal for the History of Philosophy*.

Publications in 2015:

"A dialogical, multi-agent account of the normativity of logic". *Dialectica* 69, 587-609, 2015.
"The formal and the formalized: the cases of syllogistic and supposition theory". *Kriterion* 131, 253-270, 2015.
"Conceptual genealogy for analytic philosophy". In J. Bell, A. Cutrofello, P.M. Livingston (eds.), *Beyond the Analytic-Continental Divide: Pluralist Philosophy in the Twenty-First Century* (Routledge Studies in Contemporary Philosophy), 2015.

(With Joke Spruyt) "Those funny words: medieval theories of syncategorematic terms". In M. Cameron and R. Stainton (eds.), *Linguistic Content: New Essays on the History of Philosophy of Language*. Oxford, Oxford University Press, 2015, 100-120.

Papers written in 2015:

"Conceptual genealogy for analytic philosophy" (published, see above)
"Reductio ad absurdum from a dialogical perspective". Forthcoming in *Philosophical Studies*, available online first.
"Beauty, function, and explanation in mathematical proofs". Under submission at *Philosophia Mathematica*.
Section introduction on formal methods for the *Bloomsbury Philosophical Methodology Reader* (forthcoming).

Miscellaneous:

History of Philosophy without any Gaps podcast interview on medieval logic http://historyofphilosophy.net/logic-dutilh-novaes

Blogging at
NewAPPS http://www.newappsblog.com/
M-Phi http://m-phi.blogspot.nl/
Bij Nader Inzien http://bijnaderinzien.org/

Martin Fischer

1. Type of Affiliation with the MCMP

Between 1.1.2015 and 31.7.2015 Martin Fischer was a postdoctoral fellow at the MCMP funded by the DFG-project "Syntactical Treatments of Interacting Modalities." Between 1.8.2015 and 31.12.2015 he was employed by LMU as an Assistant Professor.

2. Research Projects

In his research in 2015 he focused on his habilitation thesis. Based on his recent publications, he worked on the problem of axiomatizing Kripke constructions for truth. He investigated different proof theoretic methods to give a more accessible theory for semantical fixed-point constructions. One of the innovative aspects of this research was the incorporation of partial logics in order to achieve a direct embedding of partial theories like PKF into three valued fixed-point models via infinitary proof systems incorporating an omega-rule.

3. Academic Output

Publications in 2015:

- Martin Fischer: "Deflationism and Instrumentalism", In: Unifying the Philosophy of Truth. In the series: *Logic, Epistemology, and the Unity of Science* 36, Achourioti et.al.(eds.), Springer, 2015, 293-306.
- Martin Fischer & Leon Horsten: "The Expressive Power of Truth", *Review of Symbolic Logic*, 8, 2015, 345-369.

- Martin Fischer, Volker Halbach, Jönne Kriener, and Johannes Stern: "Axiomatizing Semantic Theories of Truth", *Review of Symbolic Logic*, 8, 2015, 257-278.

Submitted:

Martin Fischer & Norbert Gratzl: "Infinitary Proof Systems and Partial Truth".

Norbert Gratzl

1. Type of Affiliation with the MCMP

Norbert Gratzl worked for all of 2015 as an Assistant Professor at the Center.

2. Research Projects

Summary of research:

• Obligation, Free Choice, and the Logic of Weakest Permissions (together with Albert Anglberger & Olivier Roy)

The authors introduce a new understanding of deontic modals that they call obligations as weakest permissions. They argue for its philosophical plausibility, study its expressive power in neighborhood models, provide a complete Hilbert-style axiom system, and show that it can be extended and applied to practical norms in decision theory and game theory.

• The epsilon-reconstruction of theories and scientific structuralism (together with Georg Schiemer)

Rudolf Carnap's mature work on the logical reconstruction of scientific theories consists of two components. The first is the elimination of the theoretical vocabulary of a theory in terms of its ramsification. The second consists in the reintroduction of the theoretical terms through explicit definitions in a language containing an epsilon operator. This paper investigates Carnap's epsilon-reconstruction of theories in the context of pure mathematics. The main objective here is twofold: first, to specify the epsilon logic underlying his suggested definition of theoretical terms as well as a suitable choice semantics for it. Second, to analyze whether Carnap's approach is compatible with a structuralist conception of mathematics.

• Two Types of Indefinites: Hilbert & Russell (together with Georg Schiemer)

This paper compares Hilbert's ε-terms and Russell's approach to indefinite descriptions, Russell's indefinites for short. Despite the fact that both accounts are usually taken to express indefinite descriptions, there is a number of dissimilarities. Specifically, it can be shown that Russell indefinites—expressed in terms of a logical ρ-operator—are not directly representable in terms of their corresponding ε-terms. Nevertheless, there are two possible translations of Russell indefinites into epsilon logic. The first one is given in a language with classical ε-terms. The second translation is based on a refined account of epsilon terms, namely *indexed* ε-terms. The authors briefly outline these approaches both syntactically and semantically and discuss their respective connections; in

particular, they establish two equivalence results between the (indexed) epsilon calculus and the proposed ρ-term approach to Russell's indefinites.

• Introspection, Normality and Agglomeration (together with Dominik Klein & Olivier Roy)

This paper explores a non-normal logic of beliefs for boundedly rational agents. The logic the authors study is the result of dropping positive introspection for knowledge in the system developed by Stalnaker. In that system beliefs are not closed under conjunction, but they are required to be pairwise consistent, a requirement that has been called agglomerativity elsewhere. While bounded agglomerativity requirements, i.e., joint consistency for every n-tuple of beliefs up to a fixed n, are expressible in that logic, unbounded agglomerativity is not. The authors study an extension of this logic of beliefs with such an unbounded agglomerativity operator, provide a sound and complete axiomatization for it, show that it has a sequent calculus that enjoys the admissibility of cut, that it has the finite model property, and that it is decidable.

• Infinitary proof systems and partial truth (together with Martin Fischer)
In this paper the authors provide a systematic investigation of a syntactical predicate (e.g. for truth) based on proof theoretic methods. They focus on truth, interpreted in a Kripke style way via strong Kleene; whereas the aim is to connect harmoniously the partial version of Kripke-Feferman with its intended semantics. The method they apply is based on Schütte's infinitary proof systems.

• Proof-Theoretic Analysis of the Quantified Argument Calculus (together with Edi Pavlovic)

This paper investigates the proof theory of the Quantified Argument Calculus (Quarc) as developed and systematically studied by Hanoch Ben-Yami [2], [3]. Ben-Yami makes use of a natural deduction (Suppes- Lemmon-style), we, however, have chosen a sequent calculus presentation; which allows for the proofs of a multitude of significant meta-theoretic re- sults with minor modifications to the Gentzen's original framework, i.e. LK. As will be made clear in course of the paper LK-Quarc will enjoy cut elimination and its corollaries (including subformula property and thus consistency).

• Logicality, Double-line rules and Modalities (together with E. Orlandelli)

The authors investigate the use of display calculi to provide a proof-theoretic analysis of modal logics. They begin by considering some desiderata from proof-theoretic semantics, and they consider Dosen's characterization of logicality. After having shown that display logic meets Wansing's criteria, they move to Dosen's characterization of logicality in purely structural terms, which seems to match perfectly with the finer-grained analysis of structural elements permitted by display calculi. They show that, for the displayable modalities, it is possible to give a Dosen-style presentation based on double-line rules. This allows them to show the logicality of all displayable modalities.

3. Academic Output

• Incomplete Symbols: Definite Descriptions Revisited, JPL (online first)
• Obligation, Free Choice, and the Logic of Weakest Permissions (together with Albert Anglberger & Olivier Roy), RSL (online first).
• The epsilon-reconstruction of theories and scientific structuralism (together with Georg Schiemer), Erkenntnis.

• Introspection, Normality and Agglomeration (together with Dominik Klein & Olivier Roy): appeared in Proceedings of LORI V.

Submitted / Under Review/WiP

• Proof-Theoretic Analysis of the Quantified Argument Calculus (together with Edi Pavlovic), submitted: RSL
• Two Types of Indefinites: Hilbert & Russell (together with Georg Schiemer), submitted IfCoLog Journal of Logics and their Applications.
• Infinitary proof systems and partial truth (together with M. Fischer), submitted: JSL.
• A Note on von Wright's Deontic Logic, WiP
• Single Conclusion Rocks!, WiP

Further activities:

Research visit: University of California, C-alpha, February 22-March 23, 2015.

Organization:

• MA-program coordinator (together with G. Wheeler).

• MCMP ERASMUS coordinator.

• Workshop: On Formalizing Natural Language, Dec. 19, 2015. Speakers: Hanoch Ben Yami, Edi Pavlovic, Ran Lanzet, Lavinia Piccolo.

• Co-applicant of the following projects: From Shared Evidence to Group Attitudes (SEGA) & Permissions, Information and Institutional Dynamics, Obligations, and Rights (PIOTR); both were applications were successful at the DFG.

• Eugenio Orlandelli (Post-Doc, University of Bologna), research visit at the MCMP, summer term 2015.
• Edi Pavlovic (PhD-student of H. Ben-Yami) research visit at the MCMP, winter term 2015

Talks:

• Is, Ought, and Cut; University of California (invited), March 11, 2015.
• Single Conclusion Rocks! (invited), workshop: Bridges 2, Rutgers, September 20, 2015

Joint work presented by co-authors:

Edi Pavlovic presented their joint work on the proof theory of the Quantified Argument Calculus:

• April 24, 2015 at the 2nd Belgrade Graduate Conference in Philosophy and Logic
• June 12, 2015 at Speaking of the Ineffable: East and West Logic Conference (Rijeka, Croatia)
• December 19, 2015 at Formalizing Natural Language at LMU

Dominik Klein & Olivier Roy presented their joint work at:

• *LORI V, October 28-31,* Taipei, Taiwan: Knowledge, Beliefs, Introspection, Normality

Eugenio Orlandelli presented joint work at:

• November 27--29 2015 - General Proof Theory, University of Tuebingen: Logicality, double-line rules and harmony.
• September 24--26 2015 - 7th Conference on Non-classical Logics, University of Torun: Harmony, Logicality, and Double-line Rules

Ethan Jerzak

1. Type of Affiliation with the MCMP

Ethan Jerzak was a visitor at the MCMP between 1 October 2015 through the end of the year. His source of funding was a DAAD research grant.

2. Research Projects

He worked on two relatively independent projects. One continued previous work on the Knower paradox. It explores the philosophical implications of semantic paradoxes involving knowledge predicates. He argues that paradoxes of this kind have very different philosophical implications depending on whether they are generated in the context of natural language semantics, or formal mathematical theories.

The second is on the semantics of desire attributions. He investigate uses of 'wants' that are not accounted for by any extant semantics, and proposes a solution involving assessment-sensitivity.

3. Academic Output

Two papers remain under review at journals.

In 2015 Ethan Jerzak gave one talk:

"Non-Classical Knowledge", MCMP Colloquium, December 2015

He also submitted work to conferences, which resulted in talks in early 2016 in Paris, Konstanz, Warsaw, and London.

Further activities:

Ethan Jerzak participated in two seminars, one on truthmaker semantics by Johannes Kormacher, the other on Category Theory by Hans-Christoph Kotzsch. He also participated in a reading group on Logic and Reasoning.

Andreas Kapsner

1. Type of Affiliation with the MCMP

Dr. Andreas Kapsner worked at the MCMP for all of 2015 as a postdoctoral fellow based on his DFG-funded project "New Logics for Verificationism".

2. Research Projects

Andreas Kapsner further developed his account and analysis of constructive and other non-classical logics that he had been working on since the beginning of his project. He took these ideas to new fields of application, including analyses of legal discourse and contradictions in scientific evidence.
He worked with Dr. Peter Verdée (Leuven) on a paper on adaptive Nelson logics, and with Dr. Paolo Visigalli (LMU) on a paper on an Wittgensteinian interpretation of a particular argument in Hindu philosophy. He also wrote two papers with legal scholar Dr. Barbara Sandfuchs (Passau) on libertarian paternalism, i.e. the idea of steering citizens with the aid of insights from behavioral science, and issues of privacy.

3. Academic Output

Book:

Logics and Falsifications, Springer, New Trends in Logic Series

Papers:

"Nudging as a Threat to Privacy", with Barbara Sandfuchs, *Review of Philosophy and Psychology*

(forthcoming) "Coercing Online Privacy", with Barbara Sandfuchs, I/S: *A Journal of Law and Policy for the Information Society*

(forthcoming) "On Gluts in Mathematics and Science", Andreas and Verdée (eds.), Special Issue of *Trends in Logic* on Paraconsistent Reasoning in Mathematics and Science, Springer

(forthcoming) "Guilt, Innocence and the Logic of Legal Discourse", in Payette and Urbaniak (eds.), Special Issue of *Logic, Argumentation and Reasoning* on Applications of Formal Philosophy, Springer

Grant applications:

Andreas Kapsner successfully applied to the Excellence fund of the LMU, receiving 50.000€ for preparatory research for an ERC-Starting Grant application.

A project called "The Rationality of Libertarian Paternalism" has been submitted to both the DFG and the VW foundation (in both cases no decision as yet).

Talks given:

June 2015 Wittgenstein's On Certainty and the authorless Veda, Wittgenstein and Interreligious Communication, Cambridge

October 2015 Privacy Nudges: Conceptual and Constitutional Problems, Amsterdam Privacy Conference, Amsterdam

October 2015 Adaptive Nelson Logic, with Peter Verdée, Amsterdam

November 2015 Dual System Theory and Scientific Fictionalism, Invited talk, Giessen

Johannes Korbmacher

1. Type of Affiliation with the MCMP

Johannes Korbmacher stayed at MCMP as a doctoral fellow for all of the indicated period (January 1st 2015 to December 31st 2015). He was fully funded by a PhD fellowship from the center.

2. Research Projects and 3. Academic Output

During the indicated period Johannes Korbmacher completed and submitted his doctoral dissertation with the title "Properties Grounded in Identity. A Study of Essential Properties" under the supervision of Professor Leitgeb. He successfully defended his dissertation in February of this year (2016) and was awarded the highest grade: *summa cum laude*.

In 2015 he mainly focused on finishing my dissertation, however, he also completed two other side-projects: First, he presented his paper "Yet Another Puzzle of Ground" at the *SoPhiA* graduate conference in Salzburg (September 2-4, 2015), where it was awarded the *Best Paper Award*. In the meanwhile, the paper has been published in *Kriterion. A Journal of Philosophy.* Moreover, he co-organized a workshop on *Logical and Metaphysical Perspectives on Grounding*, at the GAP9 congress in Osnabrück (held on September 18, 2015). This workshop was co-organized with Jan Plate from the University of Neuchâtel and Norbert Gratzl (MCMP). Besides the funding from the Humboldt foundation, theey received generous contributions from the University of Neuchâtel and Hamburg through Professors Fabrice Correia and Benjamin Schnieder respectively.

Besides this, he also presented work from his dissertation and his side projects at different workshops and conferences: he presented the co-authored paper "What are Structural Properties" (joint work with Georg Schiemer, MCMP) at the *CLMPS* congress in Helsinki (August 3-8, 2015), he presented his paper "How to Distinguish Necessarily Coextensive but Distinct Properties" at the *GAP9* congress in Osnabrück (September 14-17, 2015), and he presented the co-authored paper "Hyperintensional Deontic Logic" (joint work with Albert Anglberger, MCMP) both at the *Deontic Logic and Ethics* workshop in Venice (November 26, 2015) and the University of Bayreuth (Dezember 15, 2015).

Hans-Christoph Kotzsch

1. Type of Affiliation with the MCMP

Hans-Christoph Kotzsch was a doctoral fellow of the MCMP for all of 2015. He was funded by the Center.

2. Research Projects and 3. Academic Output

He concentrated on writing his PhD thesis on the topic of category-theoretic semantics for higher-order logic and modal logic.

Hannes Leitgeb

1. Type of Affiliation with the MCMP

Hannes Leitgeb has been the Chair in Logic and Philosophy of Language at LMU Munich, as well as a Director of the MCMP, since October 2010.

2. Research Projects

Hannes Leitgeb finished his monograph titled *The Stability of Belief. How Rational Belief Coheres with Probability* in which he develops a new joint theory of all-or-nothing belief and degrees of belief (subjective probabilities). The book will appear with Oxford University Press at the end of 2016.

Secondly, Hannes Leitgeb has written and finished some new papers in 2015 (see below) and started working on a new book project (titled *Mathematical Empiricism. A Methodological Proposal*).

Thirdly, he continued to work on "A Defense of Logicism" (joint article with E. Zalta from Stanford) and a Stanford Encyclopedia entry on Carnap (jointly with André Carus).

3. Academic Output

Book:

The Stability of Belief. How Rational Belief Coheres with Probability. Forthcoming with Oxford University Press.

Papers:

"Imaging all the People", forthcoming in *Episteme*.

"The Humean Thesis on Belief", *Proceedings of the Aristotelian Society of Philosophy* 89/1 (2015), 143-185.

"A Bridge Principle for Ranking Functions and Subjective Probability", to appear in a volume in honour of Wolfgang Spohn.

"Probability in Logic", to appear in: *The Oxford Handbook of Probability and Philosophy* (edited by A. Hájek and C. Hitchcock), Oxford University Press.

(Several further papers are in the making.)

Talks:

"A Hyperintensional Logic for the Causal 'Because'?", Workshop on Questions in Semantics and Logic, Amsterdam (15/12/15).
"Meet the Editor", (virtual) seminar at the Central European University Budapest (08/12/15).
"Logik, Schlussfolgern, Gehirn. Das Gehirn aus der Sicht eines Logikers - in fünf Akten", Department of Philosophy, University of Göttingen (25/11/15).
"The Humean Thesis on Belief", Symposium (lead symposiast), 89th Joint Session of the Aristotelian Society and Mind Association, Warwick (12/07/15).

"On Mathematical Structuralism. A Theory of Unlabeled Graphs as Ante Rem Structures", Department of Philosophy, University of Konstanz (02/07/15).
"Logik, Schlussfolgern, Gehirn. Das Gehirn aus der Sicht eines Logikers - in fünf Akten", First Bonn Logic Lecture, University of Bonn (21/05/15).
"On Mathematical Structuralism. A Theory of Unlabeled Graphs as Ante Rem Structures", Moral Sciences Club, Cambridge (12/05/15).
"Theoretical Terms and Induction. Two Carnapian Remarks", First Salzburg-Irvine-Munich Workshop, Salzburg (24/04/15).
"Logik, Schlussfolgern, Gehirn", Auricher Wissenschaftstage (23/03/15).
"On Mathematical Structuralism. A Theory of Unlabeled Graphs as Ante Rem Structures", Department of Letters and Philosophy, University of Florence (13/03/2015).

Further activities:

Contribution to epilogue of Jonas Winner, *Das Gedankenexperiment*, in *Die Zeit* (Edition), April 2015.
Editor-in-Chief of *Erkenntnis*.
Coordinating Editor of *Review of Symbolic Logic*.
Member of the Editorial Board of the *European Journal for the Philosophy of Science*.
Member of the Editorial Board of the *Grazer Philosophical Studies*.
Consulting Editor of *Journal of Philosophical Logic*.
Consulting Editor of *Theoria*.
Associate Editor of *Studia Logica*.
Subject Editor of the *Stanford Encyclopedia of Philosophy* for Philosophy of Mathematics.
Member of the Editorial Board of *PHIBOOK: The Yearbook of Philosophical Logic*, Automatic Press.
Member of the Editorial Board of *The Collected Works of Rudolf Carnap* (Open Court).
Member of Scientific Board of *Munich Graduate School of Systemic Neurosciences* (GSN).
Member of *Center for Advanced Studies*, Ludwig-Maximilians-University Munich.
Forschungsdekan (Dean of Research) of the Faculty of Philosophy, Philosophy of Science and Study of Religion, LMU Munich.
External Assessor for Professorial Appointments or Promotions at: Hamburg, Utrecht (all 2015).
Member of Panels and Advisory Boards for: *European Research Council*. Chair of Program Committee of the *15th Congress of Logic, Methodology and Philosophy of Science*, Helsinki, 2015. Executive Committee of the Association for Symbolic Logic.
Member of the DFG Steering Committee for Philosophical Symposia} (since May 2015).
Member of the Advisory Board of the *Joint Research Center in Logic* of Tsinghua University and the University of Amsterdam.
Co-PI of the ANR-DFG Project *Mathematics: Objectivity by Representation* with Gerhard Heinzmann from the University of Nancy (since 2014, EUR 262,000 for three years).
PI of the LMU Investitionsfonds Project *Von einem logisch-mathematischen Standpunkt: Richard Swineshead und die Tradition der Calculatores* (since 2013, EUR 100,000 for two years).
PI of the DFG Project *Syntactic Approaches to Interacting Modalities* (since 2011, extension granted by the DFG).

Thomas Meier

1. Type of Affiliation with the MCMP

Thomas Meier was a doctoral fellow of the MCMP, funded by the Center, between January 2015 and April 2015 (when he had finished his PhD).

2. Research Projects and 3. Academic Output

Thomas Meier wrote his doctoral thesis at the Munich Center for Mathematical Philosophy under the supervision of Ulises Moulines, Hannes Leitgeb, and Otávio Bueno (Miami, USA). In 2015, he studied how to set up and apply a formal framework (i) that would be suited for the discussion on structural realism in philosophy of science, and (ii) by which the role of mathematization in linguistics could be studied. He also discussed the position of ontic structural realism in linguistics. Thomas developed a way of responding to an important objection to structuralist approaches in epistemology, the so-called *Newman-Objection*. As a result of his research during 2015, Thomas published his PhD thesis as a monograph.

Niki Pfeifer

1. Type of Affiliation with the MCMP

Niki Pfeifer worked as a MCMP Research Fellow during the whole year of 2015. He was funded by the MCMP until July 31, 2015. From August 1, 2015 onwards, he has been funded by his DFG project "Coherence-based probability logic: Rationality under uncertainty" (PF 740/2-2). Moreover, he became affiliated with the Department of Theoretical Philosophy at the University of Regensburg (external lecturer) and is an external member of the *Düsseldorf Center for Logic and Philosophy of Science*.

Niki Pfeifer conducted his still ongoing DFG projects PF 740/2-1 and PF 740/2-2 (both are part of the DFG Priority Programme SPP 1516 "New Frameworks of Rationality") during 2015.

2. Research Projects

(Numbers in square brackets refer to publications listed in Section (iii).)

Niki Pfeifer worked on various philosophical problems of the new paradigm psychology of reasoning and its relation to formal epistemology [3,4,8] as well as on experimental pragmatics [7]. He extended the probabilistic truth table task paradigm by systematic investigations on causal and counterfactual conditionals [1]. Furthermore, he worked on methodological issues of environmental history [6]. Ongoing research includes probabilistic interpretations of the traditional logical square of opposition [5], probability semantics for categorical syllogisms [2,4], and various aspects of uncertain conditionals including nesting/iteration and centering [9].

3. Academic Output

Publications in 2015:

[9] Gilio, A., Over, D. E., Pfeifer, N. & Sanfilippo, G. (in press). Centering and compound conditionals under coherence. 8th International Conference on Soft Methods in Probability and Statistics (SMPS 2016). *Advances in Intelligent and Soft Computing*. Dordrecht: Springer.

[8] Pfeifer, N. (in press). Naturalized formal epistemology of uncertain reasoning (Abstract). *The Knowledge Engineering Review*.

[7] Pfeifer, N. (in press). Experimental probabilistic pragmatics beyond Bayes' theorem. Commentary on Franke & Jäger: Probabilistic pragmatics, or why Bayes' rule is probably important for pragmatics. *Zeitschrift für Sprachwissenschaft*.

[6] Pfeifer, N. (in press). Cognition and natural disasters: Stimulating an environmental historical debate. In Vaz, E., Melo, A., & de Melo, C. J. (Eds.). *Environmental History in the World—Outcomes and New Approaches*. Dordrecht: Springer.

[5] Pfeifer, N. & Sanfilippo, G. (in press). Square of opposition under coherence. In Proceedings of the 8th International Conference on Soft Methods in Probability and Statistics (SMPS 2016). *Advances in Intelligent and Soft Computing*. Dordrecht: Springer.

[4] Gilio, A., Pfeifer, N. & Sanfilippo, G. (2016). Transitivity in coherence-based probability logic. *Journal of Applied Logic*, 14, 46-64.

[3] Pfeifer, N., Sanfilippo, G., & Gilio, A. (2016). Coherence under uncertainty: Philosophical and psychological applications (Abstract). *Dagstuhl Reports*, 5(5), 102.

[2] Gilio, A., Pfeifer, N. & Sanfilippo, G. (2015). Transitive reasoning with imprecise probabilities. In Destercke, S. & Denoeux, T. (Eds.), *Symbolic and Quantitative Approaches to Reasoning with Uncertainty* (ECSQARU 2015) (p. 95-105). Dordrecht: Springer LNAI 9161 (Lecture Notes in Artificial Intelligence).

[1] Pfeifer, N. & Stöckle-Schobel, R. (2015). Uncertain conditionals and counterfactuals in (non-)causal settings. In Arienti, G., Bara, B. G. & Sandini G. (Eds.), *Proceedings of the EuroAsianPacific Joint Conference on Cognitive Science* (4th European Conference on Cognitive Science; 10th International Conference on Cognitive Science) (p. 651-656). CEUR Workshop Proceedings, Vol. 1419.

Talks in 2015:

[T12, invited] Pfeifer, N. A new rationality framework for categorical syllogisms. Human Rationality: Probabilistic Points of View (I). Villa Vigoni: German-Italian Centre for European Excellence (Italy), 23.-26.11.2015.

[T11] Pfeifer, N. & Stöckle-Schobel, R. Uncertain conditionals and counterfactuals in (non-)causal settings. EuroAsianPacific Joint Conference on Cognitive Science (4th European Conference on Cognitive Science; 10th International Conference on Cognitive Science). Torino (Italy), 25.-27.9.2015.

[T10, invited] Pfeifer, N. Reasoning about uncertain conditionals. Institute of Information Theory and Automation, Czech Academy of Sciences (UTIA). Prague (Czech Republic), 10.8.2015.

[T9, invited] Pfeifer, N. Cognitive foundations of defeasible reasoning. 15th Congress of Logic, Methodology and Philosophy of Science. (CLMPS 2015). Helsinki (Finland), 3.-8.8.2015.

[T8] Gilio, A., Pfeifer, N. & Sanfilippo, G. Transitive reasoning with imprecise probabilities. 13th European Conference on Symbolic and Quantitative Approaches to

Reasoning with Uncertainty (ECSQARU 2015). Université de Technologie de Compiègne, Compiègne (France), 15.-17.7.2015

[T7] Pfeifer, N. & Stöckle-Schobel, R. The probability of indicative and counterfactual conditionals in causal and non-causal settings. Causal and Probabilistic Reasoning Conference. Munich (Germany), 18.-20.6.2015.

[T6, invited] Pfeifer, N. Interactions of formal and empirical work in interdisciplinary practice. Academy of Finland Centre of Excellence in the Philosophy of the Social Sciences (TINT), University of Helsinki (Finland), 11.6.2015.

[T5, invited] Pfeifer, N., Sanfilippo, G., & Gilio, A. Coherence under uncertainty: Philosophical and psychological applications. Dagstuhl Seminar 15221: Multi-disciplinary approaches to reasoning with imperfect information and knowledge—A synthesis and a roadmap of challenges. Schloss Dagstuhl (Germany), 25.-29.5.2015.

[T4, invited] Sanfilippo, G., Pfeifer, N. & Gilio, A. Probabilistic interpretations of the square of opposition. Seminario di Logica e Filosofia della Scienza. Universitá di Palermo (Italy), 1.4.2015.

[T3, invited] Pfeifer, N., Sanfilippo, G. & Gilio, A. Probability semantics for categorical syllogisms. Seminario di Logica e Filosofia della Scienza. Universitá di Palermo (Italy), 25.3.2015.

[T2, invited] Pfeifer, N. Coherence-based probability logic: Rationality under uncertainty. Fourth Conference of the Priority Program "New Frameworks of Rationality". Schloss Etelsen (Germany), 15.-18.3.2015.

[T1, invited] Pfeifer, N. & Stöckle-Schobel, R. Exploring counterfactual and causal conditionals. Fourth Conference of the Priority Program "New Frameworks of Rationality". Schloss Etelsen (Germany), 15.-18.3.2015.

Further activities:

Workshops organized
Niki Pfeifer organized with Uli Sauerland the “Rationality, Probability, and Pragmatics Workshop”, which will take place at the Zentrum für Allgemeine Sprachwissenschaft (ZAS), Berlin, Germany, 25.-27.5.2016

Niki Pfeifer organized with Giuseppe Sanfilippo the session “Conditionals and reasoning under uncertainty” at the *8th International Conference on Soft Methods in Probability and Statistics* (Rome, Italy).

Niki Pfeifer served in scientific committees including the PROGIC workshop series and the *1st European Conference on Argumentation*, ArgLab, New University of Lisbon, which took take place in Portugal, 9.-12.06.2015.

Editorial/reviewing activities
Niki Pfeifer was a member of the editorial board of *The Reasoner* and the *Journal of Applied Logic* in 2015. Finally, Niki Pfeifer served as a reviewer for various philosophical and psychological scientific journals, and international third-party funding agencies during 2015.

Awards/research stays
Niki Pfeifer was awarded a research stipend to stay at the "Academy of Finland Centre of Excellence in the Philosophy of the Social Sciences (TINT)", University of Helsinki (Finland). The research stay took place in June 2015.

Lavinia Picollo

1. Type of Affiliation with the MCMP

From October 2015, Lavinia Picollo has been working as a postdoctoral fellow at the Center, funded by LMU's Center for Advanced Studies (CAS).

2. Research Projects

During 2015 she worked on her doctoral thesis. From October she concentrated on turning the content of her thesis into three papers: one on deflationism, another on reference and truth, and a third one on reference in arithmetic. She also worked on another paper relating deflationist truth to higher-order quantification.

3. Academic Output

Papers:

(forthcoming) "Minimalism, Reference, and Paradoxes'', *Logica Yearbook* 2015, 15 pp.

In preparation:

"Disquotation and Infinite Conjunctions", in collaboration with Thomas Schindler, 22 pp.

"Reference in Arithmetic", 20 pp.

Talks:

(contributed) "Reference and Disquotational Truth", 29th International Symposium Logica 2015, Hejnice, Czech Republic, June 2015.
(invited) "Reference and Disquotation", Talk at the MCMP, Munich, Germany, June 2015.
(invited) "Disquotation and Infinite Conjunctions", Workshop 4: Philosophy of Logic, Buenos Aires, Argentina, August 2015.
(invited) "Disquotation and Infinite Conjunctions", "Bridges 2" Workshop, New Brunswick, United States of America, September 2015.
(invited) "Truth and Propositional Quantification'', Workshop On Formalizing Natural Language, Munich, Germany, December 2015.

Together with Thomas Schindler and Timo Beringer, Lavinia Picollo submitted a grant proposal to the DFG in July, which was successfully granted in March 2016.

She was also part of a reading group on Peter Azcel's (1988) "Non-well founded sets", CSLI Lecture Notes 14. Stanford, CA: Stanford University, Center for the Study of Language and Information.

Roland Poellinger

1. Type of Affiliation with the MCMP

Between 1 January and 30 September, Roland Poellinger worked as a postdoctoral fellow with an additional research focus in academic management at the MCMP (funded by the Center).

2. Research Projects

A. "Learning Causal Structure – Cognition, Computation, Communication"
Background. In his dissertation on *Concrete Causation*, Roland Poellinger augmented Pearl's definition of a causal model by the addition of so-called epistemic contours by which knowledge may be transferred deterministically, non-directionally, and instantaneously. Causal knowledge patterns thus conceived allow for the integration of intensional markers – the nodes of a respective graph not necessarily represent extensionally distinct entities anymore, countering the standard reading of events placed in Bayes nets by the causal modeler. The thesis presents the difficulties arising from this augmentation and how causal knowledge patterns can be used for efficient computation in partial nets, once the Markov assumption is relativized suitably: in light of the communicative aspect of causal knowledge patterns (theme "Communication") it can be explained how causal knowledge can be inferred qua intensional bridges and informational links uniquely and consistently (theme "Computation").

Central questions and methodology. Against the backdrop of methodology and results described in his PhD thesis, Roland Poellinger dedicated his research project on "Learning Causal Structure" to the cognitive foundations of models of belief propagation.

His research in this field concern the following questions:

How do we acquire knowledge about causal relations of given events?
How do we process seemingly conflicting information in causal paradoxes?
How is the direction of the "causal flow" determined – with or without the possibility of concrete intervention?
By what procedures is the existence of confounders inferred, and how is such knowledge translated into corrective actions (to screen off observed events from disturbing factors)?

Building on current trends, the core of his project consists of three closely related questions that emerge from the above-mentioned research field and exceed it in emphasizing foundational aspects of causal modeling:
How do we learn causal relations in our environment if we do not know the relata, yet? That means, how do we acquire the variables that represent the events in our surroundings? Or also: How are sense data blobs sorted in existing knowledge?
How do we treat a model whose set of variables (so to say, its domain of discourse) is changing (dynamically)? (e. g., when we learn new circumstances or when the lab situation changes)
And how are two causal models with separate sets of variables unified? (e. g., in everyday discourse or in the context of scientific research)

B. Additional Focus: "Communicating Mathematical Philosophy – Evaluating Challenges, Formulating Interfaces, Building Channels"

This special focus of his research focused on the communication side of Mathematical Philosophy and described the challenges and opportunities of media use in modern academia and our discipline in particular. Among the topics are the following points:

Talking research-2-research (building bridges within the community, e.g. with iTunes U and the development of event formats such as First Sight video abstracts)
Making complex contents accessible (utilizing [social] media for teaching and turning research results into research-based teaching [with videos etc.])
Being aware of public awareness (evaluating how foundations, press, and other public institutions perceive the MCMP and which funding opportunities arise from this perspective)
Internal communication (evaluating tools for collaboration [virtual conferencing etc.] within the team and across research groups)
Development of new formats and interactive media (video abstracts, online video search, etc.)

3. Academic Output

Papers in preparation:

(201x) Cameron Beebe and Roland Poellinger. *Bayesian Confirmation by Analogy*. (20+ pages)
(201x) Jürgen Landes, Barbara Osimani, and Roland Poellinger. *Epistemology of Causal Inference in Pharmacology*

Talks:

Nested Difference-Makers, Workshop *If Not If Then – The Nature of Exceptions*, University of Pécs (Hungary), Doctoral School of Philosophy, April 2015
The Problem of Mental Causation in Non-Markovian Network Models, Hungarian Academy of Sciences, Institute of Philosophy (Research Group for the History and Philosophy of Science), Budapest, May 2015
Non-Causal Links in Causal Chains, *8th Munich-Sydney-Tilburg (MuST) Conference in Philosophy of Science on Objectivity in Science*, Tilburg University (The Netherlands), June 2015
Bell's Theorem and Non-Markovian Network Models (w/ Mario Hubert), Conference on *Causal and Probabilistic Reasoning*, Munich Center for Mathematical Philosophy/LMU Munich, June 2015
The Problem of Mental Causation in Non-Markovian Network Models, *23rd Annual Meeting of the European Society for Philosophy and Psychology (ESPP)*, Faculty of Philosophy, University of Tartu (Estonia), July 2015
Nesting Causal Models and Evidential Relations in Pharmacology (w/ Barbara Osimani), *8th Workshop on Principles and Methods of Statistical Inference with Interval Probability (WPMSIIP'8)*, Institut für Statistik, LMU Munich, September 2015
A Coherentist Approach to Probabilistic Causal Assessment (w/ Barbara Osimani), presented by Barbara Osimani at *Bridges 2*, Philosophy Department, Rutgers University, New Jersey, September 2015

Organizational Work:
Organization of the workshop *If Not If Then – The Nature of Exceptions*, University of Pécs (Department of Philosophy), April 2015 (supported by the Scientific Section of Philosophy of the Association of Hungarian PhD and DLA Students)

Co-organization of the cross-faculty program *Formal(isiert)es Denken und empirisches Argumentieren*, (w/ Prof. Dr. Thomas Augustin, statistics department), co-funded by *Lehre@LMU*

Martin Rechenauer

1. Type of Affiliation with the MCMP

Martin Rechenauer was affiliated with the MCMP as a fellow for the whole of 2015, being present in Munich only since April (before I was acting professor for Political Theory at the University of Bamberg). Since October 2015 he holds a half-time position at LMU.

2. Research Projects and 3. Academic Output

His research was mostly connected to a joint project with Olivier Roy (now Bayreuth) on the logical structure of contractualist theories in ethics and social philosophy, focusing on a reconstruction of Scanlon and also of Habermas's discourse ethics. The main idea is to show that under specific epistemic conditions the envisaged consensus will be reached, and that these conditions are indeed satisfied in the standard discourse situation. The material was presented at the Congress of the German Society for Analytic Philosophy at Osnabrück in September 2015; a publication is in preparation.
Another topic of his research concerned Collective Intentionality. He contributed to a volume on Raimo Tuomela's book „Social Ontology" with a paper that connects the discussion of collectivity phenomena in social philosophy with the debate about anti-individualism in the philosophy of mind. In the paper he gives a further argument for Anti-Individualism, which – in difference to the well-known arguments by Burge – does not rely on a thought-experiment and gives a clear sense of a social version of anti-individualism. The paper is forthcoming 2016 in a volume edited by Gerhard Preyer on Tuomela's book with Springer.

Further activities:

Organization of a seminar at Venice International University on Deontic Logic and Ethics in November 2015, jointly with Norbert Gratzl. Participants at the seminar were, among others, John Horty, Jan Broersen, Franz Dietrich, Allard Tamminga, and from the MCMP, Albert Anglberger and Johannes Korbmacher.

Luis Rosa

1. Type of Affiliation with the MCMP

Luis Rosa has been a fellow of the MCMO from December 12, 2015 onwards. He is funded by an Alexander von Humboldt Fellowship.

2. Research Projects

During this period, his research concentrated on the relationship between formal logic and the normativity of reasoning, as well as on issues concerning the source of warrant for logical beliefs. He is currently working on a paper in which he deals with the latter issue. In this paper he argues that the source of warrant for logical beliefs is not intuition or conceptual competence, but rather just good-old reasoning. What makes this possible

is the fact that there are types of inference that are *unconditional:* they do not involve inference from other beliefs, but are rather based on pieces of suppositional reasoning (e.g. conditional introduction).

3. Academic Output

Paper published at *Logos & Episteme*. Title: "Justification and the Uniqueness Thesis Again — a reply to Anantharaman".
Paper revised and re-submitted at *Synthese*. Title: "Rational doxastic dispositions and the epistemic regress of reasons".
Paper under review at the *Journal of Philosophical Logic*. Title: "A Model-Theoretic Semantics for Attributions of Offline Rationality".
Special collection of papers in epistemology edited, along with Andre Neiva. Title: "Proceedings of the Brazilian Research Group in Epistemology".

Talk given at the *Roots of Deduction Workshop* (University of Groningen). Title: "Warranted Logical Beliefs".

Further activities:
Organization and coordination of a reading group on the relevance of formal logic to the normativity of reasoning at the MCMP. The group meets weekly.
Organization and coordination, along with Andre Neiva, of a reading group on formal epistemology at Pontificia Universidade Católica (RS, Brazil — they use video chat).

Olivier Roy

1. Type of Affiliation with the MCMP

Olivier Roy was an external fellow of the Center for the whole year (and beyond). He is funded through his regular affiliation as a full professor at the University of Bayreuth.

2. Research Projects

His research in 2015 concentrated on three main points: 1. Developing a plausible account of obligations and permissions, especially applied to a) rational recommendations in decision and game theory and b) notions of rights and powers in law. 2. Studying non-standard models of beliefs in epistemic logic, with application in belief revision theory and in game theory. 3. Developing a theory of collective agency for loose and unorganized groups.

3. Academic Output

Publications:

Articles in international, peer-reviewed journals:
(with Huimin Dong) "Three Deontic Logics for Rational Agency in Games", forthcoming in *Studies in Logic*.
(with Albert Anglberger and Norbert Gratzl). "Obligation, Free Choice and the Logic of Weakest Permissions", forthcoming in the *Review of Symbolic Logic*.
(with Jan-Willem Romeijn) "Individual and Social Deliberation: Introduction", in Economics and Philosophy, Volume 31, Issue 01, March 2015, pp 1-2.
Edited work:

(with Davide Grossi) "Logic and Rational Interaction", special issue of Journal of Logic and Computation.
(with Jan-Willem Romeijn) Symposium on Individual and Social Deliberation", special issue of Economics and Philosophy, Volume 31, Issue 01, March 2015.
Contribution to edited volumes:
(with Eric Pacuit) "Epistemic foundations of game theory", in Ed Zalta (ed), Stanford Encyclopedia of Philosophy, Spring 2015 edition.

Talks:
"Knowledge, Belief, Normality and Introspection"
Fifth International Conference on Logic, Rationality and Interaction (LORI-IV), October 28-31, Taipei, Taiwan.
LogicCC workshop (Organizer: Sonja Smets, Amsterdam), part of the CLMPS 2015, Helsinki, Finland. August 4-6, 2015.
LORI seminar, Amsterdam, May 29th, 2015
Logic research seminar, Czech Academy of Science, Prague, March 4, 2015
"Three deontic logic for rational agency in games"
Beijing Logic Forum, Tsinghua University, Beijing, China, October 20-23, 2015.
"The Logical Structure of Scanlon's Contractualism", Keynote at LSE-Bayreuth Student Conference, London School of Economics, London, May 7-8, 2015.
"A normative interpretation of epistemic game theory?", Seminaire DRI, Paris, France, March 5th, 2015.
"Deontic Logic for Multi-Agent System", ISLAMAS 2015, Chennai, India, February 1st and 2nd, 2015
"Epistemic Foundations of Game Theory", guest lecture in the Coursera MOOC "Introduction to Mathematical Philosophy" (Leitgeb and Hartmann).

Further activities:

Applications for Third-Party Funding:
Moral obligations and large-scale collective actions (Summer 2015). DFG program for initiation of an international collaboration. Together with Anne Schwenkenbecher (Murdoch University, Perth, Australia). Approx: 10000 Euro. Granted.
Distributed Information in Collective Action (Summer 2015). VW Foudation program "Originalitaetsverdacht". Together with Anne Schwenkenbecher (Murdoch University, Perth, Australia). Approx: 60000 Euro. Rejected.
Permissions, Information and Institutional Dynamics, Obligations, and Rights (PIOTR). DFG-NCN (Poland) collaboration program "Beethoven". Together with Piotr Kulicki (KU Lublin). 3-years project. Approx: 400 000 Euro equally distributed between Lublin and Bayreuth. One postdoctoral position in Bayreuth, one PhD and one postdoctoral position in Lublin. Granted. Project started in October 2015.
Collective Attitudes Formation (COLAFORM). DFG-ANR (France) collaboration program. Together with Michael Cozic (Paris). 3-years project. Approx: 400 000 Euro equally distributed between Paris and Bayreuth. Rejected.
From Shared Evidence to Group Attitudes (SEGA). DFG-GACR (Czech Republic) collaboration program. Together with Marta Bilkova (Charles University Prague). 3-years project. Approx: 400 000 Euro equally distributed between Prague and Bayreuth. One postdoctoral position in Bayreuth. Granted. Project will start in September 2016.

Workshop organization:
Workshop on Joint Duties, July 2015, Bayreuth. http://www.pe.uni-bayreuth.de/de/phil_events/phil_confs/phil_event_conf_jointduties/index.html
Formal Ethics 2015, Bayreuth. http://formalethics.net/languages/en/index.html

Gil Sagi

1. Type of Affiliation with the MCMP

During the period from January to the end of March, Gil Sagi was a postdoctoral fellow at the MCMP, funded by the MCMP. For the rest of the year she was an Assistant Professor at the Center. (Between October and the end of the year she spent time working at the Hebrew University at Jerusalem.)

2. Research Projects

Her main research was devoted to issues concerning logicality and model theory. She developed and expanded her work on the meaning of logical terms in model-theoretic semantics. She continued with her previous avenues of research: one studying the view by which logical operations in model-theoretic semantics represent intensions, and drawing implications for criteria for logicality, another connecting logicality and meaning in a novel manner, by which the (logical) forms of expressions on the proposed view are on a level of meaning comparable to the level of extensions and intensions. A new avenue of research connected her work on logicality with her previous work on the framework of semantic constraints: she generalized invariance criteria for logical terms to the novel setting of semantic constraints (which was developed and presented in a previous publication).

3. Academic Output

Papers that were published in the said period:

"The Modal and Epistemic Arguments against the Invariance Criterion for Logical Terms", *Journal of Philosophy*, 112(3): 159-167, March 2015.

Papers that were submitted to journals in that period:
"Extensionality and Logicality", invited for a special issue of *Synthese* on intensionality in mathematics.
"Logicality and Meaning" (now being revised).
"Contextualism, Relativism and the Liar" (still under review).

Other papers that were in preparation in that period:
"Invariance Criteria: Terms and Constraints".

Talks:
"Invariance Criteria: Terms and Constraints", LLCC seminar, Hebrew University, December 2015.
"Logical Consequence: Terms and Constraints", Haifa University, November 2015.
"Invariance Criteria: Terms and Constraints", Anti-Exceptionalism about Logic Workshop, Bergen, October 2015.
"Logicality and Analyticity", WIP seminar, Munich Center for Mathematical Philosophy, LMU, June 2015.
"Logicality and Meaning", Second Birmingham-Nottingham Workshop in Philosophical Logic: Truth & Logical Consequence, Nottingham, June 2015.
"Logicality and Analyticity", Discourse and Philosophy Colloquium, ILLC, Amsterdam, April 2015.

"Extensionality and Logicality", GroLog Seminar, Groningen, April 2015.
"What is a Fixed Term?", Frankfurt Logic and Semantics Group, January 2015.

Interviews:
Syracuse University, USA (Skype).
Bristol University, UK (On campus).
Haifa University, Israel (On campus).

Further activities:

During leave (1/10/2015-31/3/2016): research stay at the Hebrew University of Jerusalem (Edelstein Center and the Logic Language and Cognition Center).
Conference attended: "Symposium of the Foundations of Mathematics", Vienna, September 2015.
Conference organization: initial organization of a conference ("Model theory: Philosophy, Mathematics and Language") to be held in Munich in January 2017, pending funding approval.

Sam Sanders

1. Type of Affiliation with the MCMP

Sam Sanders worked for the entire period from Jan 1st 2015 to Dec 31st 2015 as a postdoctoral fellow of the Center, funded by an Alexander-von-Humboldt postdoctoral fellowship.

2. Research Projects

Sam Sanders is studying the computational of Nonstandard Analysis (NSA) and made a major breakthrough in March 2015, obtaining a template to obtain said content from a wide range of theorems. This establishes NSA as a "third way" between constructive and classical mathematics: Indeed, most theorems of classical mathematics have no computational content, while constructive mathematics, in which computational content is 'automatic', requires strict adherence to intuitionistic logic, which is absent from mainstream mathematics.
He has successfully applied this template to Reverse Mathematics (the 'Big Five; and the associated Reverse Mathematics zoo), computability theory, and constructive mathematics.

3. Academic Output

He submitted the following papers:

1) Sam Sanders, The unreasonable effectiveness of Nonstandard Analysis, Submitted to the APAL special issue of LFCS16, http://arxiv.org/abs/1508.07434 (2015).
2) Benno van den Berg and Sam Sanders, Transfer equals comprehension, Submitted to APAL, http://arxiv.org/abs/1409.6881 (2015).
3) Sam Sanders, The Gandy-Hyland functional and a hitherto unknown computational aspect of Nonstandard Analysis, Submitted to Computability, http://arxiv.org/abs/1502.03622 (2015).
4) Sam Sanders The taming of the Reverse Mathematics zoo, Submitted to Notre Dame Journal for Formal Logic, http://arxiv.org/abs/1412.2022 (2015).

5) Sam Sanders, Non-standard Nonstandard Analysis and a hitherto unknown computational aspect of Nonstandard Analysis, Submitted to APAL, http://arxiv.org/abs/1509.00282 (2015).
6) Sam Sanders, The effective content of Reverse Nonstandard Mathematics and the nonstandard con- tent of effective Reverse Mathematics, Submitted to CiE2016, https://arxiv.org/submit/ 1405133 (2015).
7) Sam Sanders, More than bargained for in Reverse Mathematics, Submitted to APAL, http:// arxiv.org/abs/1502.03613 (2015).
8) Refining the taming of the Reverse Mathematics zoo, to appear in Notre Dame Journal of Formal Logic (Submitted in 2015).

He gave the following talks:

On the contingency of predicativism, SOTFOMII, London, January 2015.
Talks in the logic seminars of the Universities of Birmingham and Warwick, Feb 16-17 2015.
On a hitherto unexploited nonstandard extension of the finitist viewpoint, JLWS2015, Kanazawa, Japan, March 2015.
On the contingency of predicativism, Logic seminar, University of Oslo, March 12, 2015.
The unreasonable effectiveness of Nonstandard Analysis, CCC2015, Kochel, Sept 2015.
Nonstandard Analysis as a computable foundation, SOTFOMIII, Vienna, Sept 2015.
The unreasonable effectiveness of Nonstandard Analysis, ABM, Muchenwiler, Switzerland, Oct 2015.
The unreasonable effectiveness of Nonstandard Analysis, HIFW03, Newton Institute, Cambridge, UK, Dec 2015.

Further activities:

He attended the following conferences:

SOTFOM II, Birbeck College, London, UK, January 2016
JLWS2015, Kanazawa, Japan, March 2015.
CCC2015, Kochel, Germany, Sept 2015.
ABM2015, Munchenwiler, Switzerland, Oct. 2015.
HIFW03, Cambridge, UK, Dec. 2015.

Visits to other academic institutions:

He visited the University of Oslo, March 10-18, for joint research with Eyvind Briseid and Dag Normann. They are currently writing two joint papers as a result. The University of Oslo paid for accommodation and other expenses.

Grants:

Sam Sanders obtained 50k Euro from LMU Excellent by way of seed funding for the application of an ERC starting grant in the next round (deadline Oct-Nov 2016). This money funds (among others) for a postdoc (Dr. Chuangjie Xu) who is currently formalizing Nonstandard Analysis in the proof-assistant Agda under his direction.

Georg Schiemer

1. Type of Affiliation with the MCMP

Georg Schiemer was working as a postdoctoral fellow at the MCMP between June 2015 and December 2015, funded by an ANR-DFG research project.

2. Research Projects

Georg Schiemer's research in 2015 was primarily related to the project *Mathematics: Objectivity by Representation* (*MathObRe*), co-funded by ANR-DFG. His main objective was to connect two fields of research, namely work on theoretical terms in the philosophy of science and work on structuralist themes in philosophy of mathematics. Schiemer's research has focused specifically on two thematic issues. The first one concerns the formulation of a uniform semantics for theoretical and mathematical terms (see, in particular, Andreas & Schiemer 2016). Different theories are currently on the market that aim to capture a central semantic feature of both types of terms, namely the fact that their meaning is usually left incomplete or undetermined in a relevant sense. In the logic of science, this observation has led to different attempts of a model-theoretic analysis of Carnap's "indirect interpretation" view of theoretical terms. A closely related approach is Carnap's epsilon-reconstruction of scientific theories. A main task in Schiemer's work was be to assess Carnap's epsilon-reconstruction of theories both from a logical and a philosophical perspective and to apply it in the context of axiomatic theories from pure mathematics.
The second focus in Schiemer's work on the project concerns the ontological underpinnings of various forms of logical theory reconstruction in mathematics and in the sciences. In the latter context, this is usually related to the question whether a particular syntactic or semantic representation of theoretical terms commits one to a realist or non-realist account of their designata, namely theoretical entities (such as electrons, genes, or wave functions). A strikingly similar debate about the proper ontological status of mathematical entities can be found in modern structuralist philosophies of mathematics. In Schiemer's joint work with Norbert Gratzl and Holger Andreas, the attempt has been made to bridge these two debates by focusing on Carnap's mature work on the logical reconstruction of theories and its philosophical interpretation. In recent work on Carnap's *Wissenschaftslogik*, it has been suggested that his account is compatible with a form of scientific structuralism. A central aim was thus to further substantiate this observation. More specifically, the question was addressed in (Schiemer & Gratzl 2016) whether and if so, in what sense, Carnap's approach is compatible with a structuralist conception of scientific theories. Another point considered here was to reassess Friedman's structuralist thesis in the context of mathematical theories. Thus, given the application of the epsilon-reconstruction to pure mathematics, a guiding research question was to see in what respect Carnap's account is compatible with a structuralist conception of mathematical theories.

3. Academic Output

Publications:

„A choice semantical approach to theoretical truth", (with Holger Andreas), *Studies in History and Philosophy of Science*, (2016), 58, pp.1–8, DOI 10.1016/j.shpsa.2016.02.001)
„Carnap's early metatheory: scope and limits", (with Erich Reck and Richard Zach), Synthese, (forthcoming, DOI 10.1007/s11229-015-0877-z)
„The epsilon-reconstruction of theories and scientific structuralism", (with Norbert Gratzl), *Erkenntnis*, (forthcoming, DOI 10.1007/s10670-015-9747-9)
Work in Progress:

„Two types of indefinites: Russell & Hilbert“ (with Norbert Gratzl) (conditionally accepted)
“What are structural properties?” (with Johannes Korbmacher) (under review)
„Hilbert, duality, and the geometrical roots of model theory (with Günther Eder), (in progress)
„Structural abstraction and purity: a reply to Linnebo & Pettigrew“ (with John Wigglesworth), (in progress)
„What structural properties are all about“ (with Johannes Korbmacher) (in progress)
Edited Books:
Rudolf Carnap, Collected Works, Vol. III: *Pre-Syntax Logic*, 1927-1934 (bilingual edition), E. Reck, G. Schiemer, and D. Schlimm, eds. and trans., Oxford University Press, (in preparation)
Carnap on Logic, Special Issue, *Synthese*, (in preparation)
The Prehistory of Mathematical Structuralism, (co-edited with E. Reck), Oxford University Press, (in preparation)

Presentations:

Carnap on logicism and the application of mathematics, Workshop *Les Mathématiques dans les Encyclopédies Européenes de L'Entre-deux-guerres*, Lille, 12-13/11/2015 (invited)
Duality and transfer principles: The rise of model-theoretic methods in projective geometry, Third International Meeting APMP, Paris, 02-04/11/2015
Theoretical terms and structural content, Philosophy of Science Colloquium - IVC, Vienna, 16/10/2015
What is theoretical truth?, SIFA Midterm Conference *Truth and Persuasion*, Sassari, 24-26/09/2015
Klein's invariant-theoretic structuralism, Workshop *Origins of Mathematical Structuralism*, Vienna, 18/09/2015
Geometrical roots of model theory: duality and relative consistency, MCMP Colloquium, Munich, 09/07/2015
The geometrical roots of model theory (with Günther Eder), Logik Café Colloquium, Vienna, 29/06/2015
Hilbert’s epsilon terms, Russell’s indefinites, and indexed epsilon terms (with Norbert Gratzl), *Epsilon 2015*, Montpellier, 10-12/06/2015
Husserl and Carnap on completeness, 10th Congress of the OEGP, Innsbruck, 04-06/06/2015

Further activities:

Co-organizer of the MCMP-Workshop *Foundations of Mathematical Structuralism* (12-14 October, 2016); Successful application to the DFG for €15.000,- of conference funding.
Co-organizer of the Workshop *Origins of Structuralism*. University of Vienna, September 18, 2015
Member of the editorial board of *The Reasoner*
Member of the editorial board of *The Collected Works of Rudolf Carnap*

Thomas Schindler

1. Type of Affiliation with the MCMP

Thomas Schindler was funded by the Center, first, as a doctoral fellow (until June), and then as a postdoctoral fellow (from July to September). In April and May of that year he was also a visiting scholar at the Tilburg Center for Logic, General Ethics and Philosophy of Science (TiLPS). Since October 2015 he has been a fellow at the University of Cambridge.

2. Research Projects

Thomas Schindler was mainly occupied revising his PhD thesis *Type-Free Truth* for publication. He also started a new research project on classes and logical paradoxes.

3. Academic Output

Papers (published or accepted or in preparation):

"A disquotational theory of truth as strong as Z2-", *Journal of Philosophical Logic 44* (2015), pp. 395-410
"Reference graphs and semantic paradox" (with T. Beringer), 15 pp., *Logica Yearbook 2015* (accepted)
Papers (in preparation or under review):
"A graph-theoretic analysis of the semantic paradoxes" (with T. Beringer), 50 pp., (in preparation)
"Disquotation and infinite conjunctions" (with L. Picollo), 22 pp., (in preparation)
"Some notes on truth and comprehension", 30 pp., (in preparation)

Talks:

A deflationary account of classes, Early Career Philosophy Group, Cambridge (UK), November 2015 (invited)
Deflationism and the purpose of truth, 15th Congress of Logic, Methodology and Philosophy of Science (CLMPS), Helsinki (Finland), August 2015 (contributed)
Reference-graphs, games for trut,h and paradox, 15th Congress of Logic, Methodology and Philosophy of Science (CLMPS), Helsinki (Finland), August 2015 (contributed)
A graph-theoretic analysis of the semantic paradoxes, Logica 2015, Hejnice (Czech Republic), June 2015 (contributed)
A graph-theoretic analysis of the semantic paradoxes, Workshop on truth and paradox, Gent(Belgium), April 2015 (invited)
Truth and comprehension, Workshop on truth and paradox, Gent(Belgium), April 2015 (invited)

Further activities:

Defense of PhD thesis January 2015 (with highest distinction)
online publication of PhD thesis, June 2015
Grant proposal for the DFG (with Lavinia Picollo and Timo Beringer), July 2015
(successfully: in March 2016, they were granted 177,000.00 EUR)
Refereeing (*Bulletin of Symbolic Logic*, *Studia Logica*, *Theoria*, *Pacific Philosophical Quaterly*, *Synthese*, *Erkenntnis*)
Conferences attended: Logica 2015, Hejnice (Czech Republic), June 2015; 15th Congress of Logic, Methodology and Philosophy of Science (CLMPS), Helsinki, August 2015; Workshop on truth and paradox, Gent (Belgium), April 2015

Gregor Schneider

1. Type of Affiliation with the MCMP

Gregor Schneider did research as a visiting fellow (partially supported by MCMP funds).

2. Research Projects

His research in 2015 concerned:
a) *the reconstruction of Euclid's axiomatization of elementary geometry*: he was able to provide a historical appropriate and systematic reconstruction of Euclid's principles of axiomatization (see articles) and to give a first outline of a correct proof of the first proposition of Euclid's Elements;
b) *Plato's Meno*: he discovered a *new* interpretation of the main themes of Plato's dialogue *Meno* by taking account of the fact that the question of the dialogue "Is virtue teachable?" is the central question of educational sciences and, in its practical means, of teachers training;
c) *mathematics and imagination*: he was able to provide further evidence for his theory of mathematical imagination from cognitive psychology, adjusted it to other ongoing research in mathematics education, and pointed out some consequences for modern structuralism of mathematics;
d) *introspection and psychology*: his research was focused on the imagination of mathematical structures, the epistemological problems of introspection, and the relation and effect of thought on sensation and motivation;
e) *mathematics and Albertus Magnus:* he acquainted himself with the work of Albertus Magnus, medieval mathematics, and especially with Albertus' untranslated commentary on Euclid's Elements.

3. Academic Output

Publications:

Die versteckte Exzellenz der euklidischen Axiomatik. In: AKAN – Antike Naturwissenschaft und ihre Rezeption 2016. (accepted)
Setting things straight. A new reading of Plato's concepts round and straight in Parmenides 137de (under review)
Mathematische Vorstellungsbildung in der pädagogischen Praxis (under review)
Platons Menon als Grundlage der Lehrerbildung (in preparation)
Probleme der Introspektionsforschung (in preparation)
Mathematical structuralism and mathematical imagination. The indistinguishability of mathematical objects and their value for axiomatizations (in preparation)

Talks:

20. March *A New Reading of Euclid's Definitions* Columbia, University of South Carolina; TRiP Conference: Pictures and Proofs;
05. May *A new interpretation of Prm 137de* MUSAPH-Colloquium, LMU;
13. June *Die versteckte Exzellenz der euklidischen Axiomatik* Mainz, AKAN-Tagung
(06. August *Formalizing informal set theory* Helsinki, Logic Colloquium; paper accepted, cancellation due to illness)
24. September *Eine Theorie mathematischer Vorstellungsbildung* Hamburg, DMV-Jahrestagung;

24. October *Die Spiritualisierung der Mathematik bei Nikolaus von Kues* Bernkastel-Kues, Cusanus Hochschule.

Job offer: Research Associate (half-time) at the Institute of Philosophy and Aesthetics at Alanus University, Alfter, Germany.

Stanislav Speranski

1. Type of Affiliation with the MCMP

Stanislav Speranski spent the whole year as a postdoctoral fellow at the MCMP. The source of his funding was a fellowship from the Alexander von Humboldt Foundation.

2. Research Projects

He presented some new arguments concerning the complexity of various truth hierarchies arising in Kripke's theory, and used them to obtain a bunch of interesting generalizations of known results. These arguments are both relatively simple, involving only the basic machinery of constructive ordinals, and very general.
Moreover S.P. Odintsov and Stanislav Speranski jointly investigated the relationships between Belnapian modal logics (i.e. those extending Odintsov–Wansing' modal logic with "strong negation") and normal modal logics, provided certain handy characterizations, and suggested a useful decomposition of the lattice of Belnapian modal logics.

3. Academic Output

Papers:

S.P. Odintsov and S.O. Speranski (2016). The lattice of Belnapian modal logics: special extensions and counterparts. *Logic and Logical Philosophy* 25(1), 3–33. (This article resulted from research carried out in 2015.)

Another paper is under review:
S.O. Speranski. A note on the computational aspects of Kripke's theory of truth. 15 p. Submitted.

Talks:

1) 26.10.2015:
Philosophical Seminar
Hosted by Georg-August-University of Göttingen
2) 21.10.2015:
Advanced Seminar in Mathematical Logic
Hosted by Ludwig-Maximilians-University Munich
3) 05.10.2015:
Seminar in Theoretical Computer Science and Mathematical Logic
Hosted by Universitaet der Bundeswehr Munich
4) 09.09.2015:
Seminar `Logical Problems of Informatics'
Hosted by Moscow State University

5) 07.09.2015:
Seminar `Proof Theory'
Hosted by Steklov Mathematical Institute (Moscow)
6) 07.08.2015:
Conference `Logic Colloquium 2015'
Hosted by University of Helsinki
7) 13.07.2015:
Logic Seminar
Hosted by Mathematical Institute of the Czech Academy of Sciences (Prague)
8) 23.06.2015:
Logic in Bochum - An Informal Workshop
Hosted by Ruhr-University Bochum
9) 28.04.2015:
Conference *Approximation of Logical Models, Algorithms and Tasks* 2015
Hosted by Omsk Division of Sobolev Institute of Mathematics
10) 13.03.2015:
Lectures at Centre for Logic and Philosophy of Science
Hosted by Ghent University
11) 09.03.2015:
Seminar at Laboratoire d'Algorithmique, Complexite et Logique
Hosted by Universite Paris-Est Creteil
12) 04.02.2015:
Seminar in Theoretical Computer Science and Mathematical Logic
Hosted by the University der Bundeswehr Munich

Florian Steinberger

1. Type of Affiliation with the MCMP

Florian Steinberger worked as an Assistant Professor at the Center from 01.01.15 to 20.04.15. Since then, he is a lecturer at Birkbeck College, University of London, while continuing to be an external member of the MCMP.

2. Research Projects

In 2015, he continued to pursue two principal lines of research. The first project is concerned with the question of the normative status of logic: in what sense, if any, can logic be said to have normative authority over our thinking? During the last year he explored this question from a number of angles, both historical (Kant, Frege, Carnap) and systematic. It is also the topic of his habilitation, which he is writing under the supervision of Hannes Leitgeb, John MacFarlane (UC Berkeley), and Josef Perner (University of Salzburg). The second project examines a view in the philosophy of language and logic known as (logical) inferentialism. Here he was primarily concerned with the clarification of various foundational conceptual issues, with the correct formulation of the central notion of *harmony*, as well as with the ramifications of the view so understood for our knowledge of logic and for our understanding of the logical constants.

3. Academic Output

Publications:

"Frege and Carnap on the Normativity of Logic", forthcoming in *Carnap on Logic*, special issue of *Synthese*, G. Schiemer (Ed.).

"Explosion and the Normativity of Logic", forthcoming in *Mind*.

"Inferential Role Semantics" (with Julien Murzi), forthcoming in *Blackwell Companion to Philosophy of Language*, second edition, B. Hale, A. Miller and C. Wright (Ed.).

"The Normative Status of Logic", forthcoming in *Stanford Encyclopedia of Philosophy*.

Work in preparation:

Books:
Inference and Logic (with Julien Murzi)
The Normativity of Logic

Editorial Work:

Logical Inferentialism (with Neil Tennant), under review at *Routledge*.

Manuscripts:

'Consequence and Normative Guidance, in preparation.

'Understanding and Inference', in preparation.

'On the Constitutive Normativity of Logic', in preparation.

'Consequence and Credence', in preparation.

Talks:

Departmental Colloquium, University of Kent, March 2015.
Research Seminar, Birkbeck College, April 2015.
Logic, Epistemology and Metaphysics Seminar, Institute of Philosophy, University of London, November 2015.
Normativity and Rationality Seminar, King's College, November 2015.

Conference organized:
International conference *Inference and Logic* in collaboration with the Institute of Philosophy, University of London.

Grants:
British Academy/Leverhulme Small Research Grant 10,000 Pounds (ended in July 2015)
Conference Grants (Mind Association, Aristotelian Society) 1700 Pounds – successful application
European Research Council Starting Grant – unsuccessful application

Further activities:
Course Coordinator MCMP
Deputy Women's Officer, Faculty of Philosophy, Philosophy of Science and Religious Science

Funding applied to:
Conference Grants (Mind Association, Aristotelian Society) 1700 Pounds – successful

Johannes Stern

1. Type of Affiliation with the MCMP

Throughout 2015 Johannes Stern was a postdoctoral fellow at the MCMP. From 1.1-31.01.2015 he was a visiting fellow funded by the MCMP. From 1.2 to 31.12.2015 his research was funded by the DFG research project „Syntactical Treatments of Interacting Modalities'' (18 months extension of the original project).

2. Research Projects

Johannes Stern worked on:

- the production process of his monograph *Toward Predicate Approaches to Modality*, which was published with Springer in November 2015.
- a paper on norms for theories of truth in which he proposes a new norm that has not been discussed in the literature so far. The corresponding paper "The Sky is the Limit: Reconsidering the Equivalence Scheme" was submitted for publication.
- two further research projects: The first project is on supervaluational truth and possible axiomatizations thereof, whereas the latter is on the problems and prospects of defining truth in epistemic and, more generally, hyperintensional languages.

3. Academic Output

Monographs:

Toward Predicate Approaches to Modality, Trends in Logic Vol. 44, Springer International Publishing Switzerland, 2015.

Articles in peer-reviewed journals:

"Necessities and Necessary Truths. Proof-Theoretically", *Ergo* 2(10):207-237, 2015.
"Axiomatizing Semantic Theories of Truth?" (with M. Fischer, V. Halbach and J. Kriener), *The Review of Symbolic Logic* 8(2):257-278, 2015.
"Paradoxes of Interaction?" (with Martin Fischer), *Journal of Philosophical Logic* 44(3):387- 308, 2015.

Submitted/In preparation:

"The Sky is the Limit: Reconsidering the Equivalence Scheme" (30p.)
"Supervaluation-Style Truth Without Supervaluations"
"Truth in Epistemic Languages"

Talks:

"A New Norm for Truth", CLMPS 15, August 5, 2015, Helsinki.
"A New Norm for Truth", GAP9, September 16, 2015Osnabrück

In 2015 refereed for *Ergo*, *Mentis*, *Mind*, and the *Mathematical Reviews*.

He also wrote a proposal "Formal Truth in Epistemic Languages" for a Marie Sklodowska Curie Individual Fellowship with the University of Bristol, which was accepted by the European Commission.

Matthias Unterhuber

1. Type of Affiliation with the MCMP

Matthias Unterhuber was a postdoctoral fellow at the MCMP in the period 1.3.2015 – 31.8.2015, based on MCMP Funds. (Afterwards he became a fellow at the Center for Philosophy of Science at the University of Pittsburgh.)

2. Research Projects and 3. Academic Output

His research at the MCMP consisted of two parts. The first part concerns his project *The Semantics of Generics and Regularities*. (See section Applications and the manuscript (8) below). His joint working paper with Igor Douven (4) *How Many Types of Generics? A Factor-Analytic Study of Recent Theories of Generics* is a direct result of that ongoing effort.

The second part of his research concerns conditional logics, a topic which he pursued in his PhD thesis. Working at the MCMP extended that research in important ways. Paper (3), *The Strange Status of The Principle of Conditional Non-Contradiction,* was in large parts written at the MCMP, as well as (6), *Beyond Reflexivity and Transitivity – Generalizing Preferential KLM Models and Lewis Relational Semantics* and (7) *A Simplified Completeness Proof for System P based on Lewis Relational Semantics*. He also began the paper (1) *Beyond System P – Hilbert-Style Convergence Results for Conditional Logics with a Connexive Twist* at the MCMP, which is now accepted for publication. Furthermore, he made important progress on his paper with Heinrich Wansing (5), *A Base Logics for Connexive Conditionals based on First-Degree Entailment*. A direct result of the work on that project at the MCMP is an additional paper (2), *First Degree Entailment with Constructible Negation and an Extensional Semantics*. This paper describes an axiomatization of first degree entailment on which (5) aims to build.

Articles:

Beyond System P – Hilbert-Style Convergence Results for Conditional Logics with a Connexive Twist (2016), *IfCoLog Journal of Logics and their Application*, accepted for publication.
First Degree Entailment with Constructible Negation and an Extensional Semantics, Submitted Manuscript.
The Strange Status of The Principle of Conditional Non-Contradiction, Manuscript.
How Many Types of Generics? A Factor-Analytic Study of Recent Theories of Generics, with Igor Douven, Working Paper.
A Base Logic for Connexive Conditionals based on First-Degree Entailment, with Heinrich Wansing, Working Paper.
Beyond Reflexivity and Transitivity – Generalizing Preferential KLM Models and Lewis's Relational Semantics, Working Paper
A Simplified Completeness Proof for System P based on Lewis's Relational Semantics, Manuscript.
The Semantics of Generics and Regularities (Project Proposal), Manuscript.

Talks:

06/15 *The Strange Status of the Principle of Non-Contradiction – Or: Why Conservative Conditional Logics cannot get the Whole Job Done*, Workshop Connexive Logic, World Congress on Universal Logic, Istanbul, Turkey

05/15 *Possible Worlds Semantics for Conditionals: The Case of Chellas-Segerberg Semantics*, Seminar Multi-Disciplinary Approaches to Reasoning with Imperfect Information and Knowledge – a Synthesis and a Roadmap of Challenges, Schloss Dagstuhl, Germany

Applications:

During the fellowship at the MCMP, Matthias Unterhuber received a fellowship award at the Center for Philosophy of Science at the University of Pittsburgh for the academic year 2015/16.

During his time at the MCMP he worked on his project proposal *The Semantics of Generics and Regularities*. The submission of the project has already in part been successful. He submitted a version of it for an application for a junior fellowship at the Walter Benjamin Kolleg in Bern in March 30th 2016 and entered the interview round for the junior fellowship. The junior fellowship includes a seven-month stipend and is start-up funding for projects. I aim to submit the proposal September 2016 for a Marie Sklodowska Curie Fellowship at the University of Bern and submit project proposals based on the project description crafted at the MCMP with the DFG as well research funding agencies in the Netherlands, Belgium, and France.

John Wigglesworth

1. Type of Affiliation with the MCMP

John Wigglesworth has been a postdoctoral fellow at the MCMP since 15 June 2015. He is funded by the DFG-ANR project *Mathematics: Objectivity by Representation.*

2. Research Projects

His research in 2015 focused primarily on the philosophy of mathematics, in particular on mathematical structuralism. He has been investigating questions involving the identity and distinctness of objects in abstract mathematical structures, particularly in light of the existence of non-rigid structures, which are structures that admit non-trivial automorphisms. He has also been looking at the various dependence claims that mathematical structuralists make, for example: that mathematical objects depend on the structure that they belong to; that they depend on other objects in the same structure or on the structural relations they bear to those objects; and that mathematical structures depend on the existence of systems or realisations that exhibit those structures. Some of his research has involved articulating these dependence claims in terms of the metaphysical notion of ground. In addition to these metaphysical questions, he is interested in the epistemology of mathematical structuralism, in particular, how we come to have knowledge of mathematical structures. Here he focuses on the role that structural abstraction principles play in acquiring this knowledge.

Ha has also conducted research in the philosophy of logic, focusing on the idea that different formal logics are scientific theories of consequence. In particular, he is interested in when two theories of consequence are equivalent to one another. He is also interested in epistemological issues in this area, such as why one would choose one theory of consequence over another, and whether the standard theoretical virtues (simplicity, strength, etc.) apply when treating formal logics as scientific theories of consequence.

3. Academic Output

The research carried out during this period led to the acceptance of a paper ("Grounding in mathematical structuralism") in a peer-reviewed Oxford University Press volume on metaphysical fundamentality. In addition, one paper ("Non-eliminative structuralism, Fregean abstraction, and non-rigid structures") has been submitted to *Philosophia Mathematica*, and a second paper ("Structural abstraction and purity: a reply to Linnebo and Pettigrew", co-authored with Georg Schiemer) will be submitted to the *Philosophical Quarterly.* A fourth paper ("Quinean equivalence on theories of consequence") is in preparation. Some of John Wigglesworth's research was also presented at the MCMP in July and at the DFG-ANR Project Colloquium at the DFG in Bonn in November.

In September, he was part of a team that organised a conference on the foundations of mathematics at the Kurt Gödel Research Center in Vienna. The conference was the third installment of the Symposia on the Foundations of Mathematics (SotFoM), as well as the closing conference for the Hyperuniverse Project based at the KGRC. In relation to the SotFoM series of events, he has been co-editing a special issue of the journal *Synthese* on "The Foundations of Mathematics: Competing Foundations, New Axioms and the Set-Theoretic Multiverse" (with Carolin Antos-Kuby, Neil Barton, Sy David Friedman, and Claudio Ternullo), which is currently in preparation.

Dietmar Zaefferer

1. Type of Affiliation with the MCMP

Professor Zaefferer spent the entire year of 2015 as a visiting fellow of the MCMP in one of its offices first in Ludwigstr. 25, then, after July 22, in Leopoldstr 44. He was self-funded.

2. Research Projects and 3. Academic Output

His research in 2015 was focused on two strands, one belonging to the interface between formal semantics and cognitive science, the other one to the foundations of empirical methods in linguistics.
(a) Strand one aims at developing a version of Situation Theory (Barwise & Perry) that is able to formally represent states of mind of human and other agents and their changes in a way relevant for both Cognitive Science and Linguistic Semantics. He therefore christened it *Situation Theory for Cognitive Science and Linguistics* (*STyCSL*). One of its core concepts is that of an *A*-pictured situation, a situation as it would be if agent *A*'s representation of it would be correct. This entails several advantages:
(i) An *A*-pictured situation and a *B*-pictured situation (for two distinct agents *A* and *B*) can be identical even though *A*'s and *B*'s representations, being internal to their minds, cannot.

(ii) There are two ways for an *A*-pictured situation *s* to be generated: On the basis of an situation token that is conceptualized and described by *A* as being of type *T* and on the basis of a given type *T* which like a blueprint allows the construction of a situation token *s* that is of type *T*.
(iii) Since an *A*-pictured situation can be underspecified with respect to its being of type *T* or not, this can be used to model circumstances which arouse *A*'s curiosity. The relevant features of *T* are its inquisitive features.
In joint work with his PhD student Philip Pfaller, Professor Zaefferer introduced into *STyCSL* three factors with three (once) and two (twice) levels: Kind of attitude (knowledge, nescience, inquisitiveness), reality (real, imagined) and privacy (private, shared). This allows for modeling not only private and common belief, but also both kinds of ignorance and curiosity, all of them in a real and pretense version.

(b) The other strand results from the current replicability crisis in closely related fields such as experimental psychology or economics. Quantitative (experimental and corpus based) methods in linguistics are exposed to the same kind of criticism that has resulted in some top journals' refusal to accept empirical studies using Null Hypothesis Significance Testing. Encouraged by a personal and written exchange of ideas on that topic with Jan Sprenger (Tilburg University), who specializes in the philosophy of statistics, Professor Zaeffere developed recommendations for (especially PhD) students of linguistics who use quantitative methods to avoid the pitfalls of statistics that gave rise to the crisis.

Further activities:

- He published a review of Elsen, Hilke: *Linguistische Theorien*. - Tübingen: Narr, 2014, in *Germanistik* 56, 2015, Heft 1-2: 18.

- He served in a tenure-track evaluation committee at the Georg-August-University Göttingen.

We hope that this gives a good summary of what was going on academically at the MCMP in the period from 01/01/2015 to 31/12/2015.

Hannes Leitgeb, April 26th 2016
MCMP, LMU Munich