PhD Kolloquium

Fall Semester 2012 CAAD ETHZ

PhD Theory on Technology

Kolloquium Fall 2012

first meeting:
October 2nd 2012

Meetings are held on Tuesdays, 9 am / 3 pm via skype, between the CAAD Chair in Zürich and the NUS/ETHZ Future Cities Laboratory in Singapore.

Computability – considered in the light of the *Master Argument*

Computation is largely treated today as the procedure to »mechanize« »logics«. Our interest with a *projective* theory on technology is not to reject (negate) or affirm (analyse) the assumptions involved, but to sort them out strategically. Our interest is to complement the scientistic paradigm of »control« for theorizing technology with a humanistic dimension of ability and artistic mastership. This interest has a long tradition in philosophy, and crystallizes in the so-called Master Argument. The Master Argument regards the possibility if and how we can meaningfully and methodically involve *temporality* and *self-referentiality* into logical/formal considerations. The inferential structure of the Master Argument has first been articulated by Diodorus Cronus in the 3rd century BC, and tries to formalize a paradox which has preoccupied all the main steps of development in systematical thought ever since. This is why the many attempts to formalize this paradox provide, for our projective theory interest, a rich and differentiated *reflecting surface* that allows to investigate, comparatistically, how these questions have been treated over time.

While the philosophical interest in the Master Argument was mainly in questions of legitimation and foundation, our interest in it is operational. We will not take, allegorically speaking, the position of the Despotic Priest, the Philosopher King, the Statesman or the Assigned Administrator, but that of the Symbolical Metallurgist. In short: we will seek to extract from the Master Argument and its history a template that allows us to cultive computing as an ability, namely the template of *a mechanism for learning how to learn when being equiped with the generic methods of algebra*.

We will read Jules Vuillemin‘s book *Necessity and Contingency, The Master Argument* (Center for the Study of Language and Information, Stanford University Press 1996). The historical account he gives is framed by the rôle of probabilistics for Information Science and Computing, and thereby especially relevant.

If you are interested in participating please email until September 28 to: buehlmann@arch.ethz.ch
The book is avaliable in PDF version upon request.

Main reading

Jules Vuillemin, *Necessity and Contingency.The Master Argument*, Center for the Study of Language and Information, Stanford University Press 1996.

Tuesday October 9 2012
Generic Methods and The Master Argument

Tuesday October 16 2012
Systems of Necessity – A System of Logical Fatalism: Diodorus Cronus.

Tuesday October 23 2012
Systems of Necessity – Eternal Return and Cyclical Time: Cleanthes' solution.

Tuesday October 30 2012
Systems of Necessity – Freedom as an Element of Fate: Chrysippus.

Tuesday November 13 2012
Systems of Contingency – Towards Rehabilitating Opinion as Probable Knowledge of Contingent Things. Aristotle.

Tuesday November 20 2012
Systems of Contingency – Epicurus and Intuitionism.

Tuesday November 27 2012
Systems of Contingency – Carneades and the Skeptical Nominalism of the Modalities.

Tuesday December 4 2012
Systems of Contingency – Platonism and Conditional Necessity.

Tuesday December 11 2012
Epilogue

Tuesday December 18 2012
Temporality, Self-reference, and Computation as an ability (Vera Bühlmann)

Complementary reading

Tuesday October 9 2012
E.T.Bell: From Mechanics to Generalized Variables ([1] p. 370–382)

Tuesday October 16 2012
Israel Kleiner: History of Classical Algebra ([2] p.1–14) &
History of Group Theory ([2] p. 17–38)

Tuesday October 23 2012
Leo Corry: Richard Dedekind – Numbers and Ideals ([3] p. 64–135)

Tuesday October 30 2012
Leo Corry: Emmy Noether – Ideals and Structures ([3] p. 220–252)

Tuesday November 13 2012
Israel Kleiner: History of Ring Theory ([2] p.41–60) & History of Field Theory ([2] p. 63–77)

Tuesday November 20 2012
Israel Kleiner: History of linear Algebra ([2] p.79–89) &
Emmy Noether and the Advent of Abstract Algebra ([2] p. 91–101)

Tuesday November 27 2012
E.T.Bell: Invariance ([1] p. 420–468)

Tuesday December 4 2012
Yvette Kosmann-Schwarzbach: The Inception of the Noether Theorems ([4] p. 25–53)

2012 Tuesday December 11 2012
Yvette Kosmann-Schwarzbach: The Inception of the Noether Theorems ([4] p. 25–53) &
The Noether Theorems ([4] p. 55–65)

Tuesday December 18 2012
Werner M. Seiler: Involution – Overdetermined Systems ([5] p.1–8) &
Involution 1: Algebraic Theory ([5] p.63–104)

[1] E.T.Bell, *The Development of Mathematics,* Dover, 1940.

[2] Israel Kleiner, *A History of Abstract Algebra*, Birkhäuser Basel/Boston 2007.

[3] Leo Corry, *Modern Algebra and the Rise of Mathematical Structures*, Springer 2004.

[4] Yvette Klosmann-Schwarzbach, *The Noether Theorems: Invariance and Conservation Laws in the Twentieth Century*, Springer 2011.

[5] Werner M. Seiler, *Involution. The Formal Theory of Differential Equations and its Applications in Computer Algebra*, Springer 2010.