University of Zurich[UZH]

Institute of Philosophy
Doctoral Programme: "Philosophy – Language, Mind, and Practice"

Master Class

Computation and Mind

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14th & 15th December 2018

Synopsis

In 1936 Alan Turing invented the universal Turing machine and with it the fundamental logical principles of the digital, stored-program, general-purpose computer–and a dozen years later the first modern electronic computer, called simply 'Baby', ran its first program. From 1936 until his death in 1954, Turing also pioneered the now burgeoning fields of the philosophy of computing and the philosophy of AI. In this course we present some of our favourite issues in those fields.

Session 1 examines the challenge of devising a criterion for distinguishing minds from non-minds, considering in depth the most famous criterion–Turing's imitation game. Session 2 looks back at the birth of computational theories of mind and intelligence. Session 3 examines modern claims that not only the human brain but also the entire universe are Turing-machine computable. Session 4 looks at three so-called conceivability arguments–due to Descartes, Kripke, and Chalmers—for the conclusion that the mind is not the brain.

Moving on to Day Two, Session 5 focuses on the assumption that human minds—being nothing more than biological computers–are substrate-independent, and that it is therefore possible to survive biological death by being 'uploaded'. Session 6 examines the emerging problem of the indeterminacy of computation. Session 7 revisits John Searle's still influential Chinese room argument against the computational theory of mind and the possibility of 'strong' artificial intelligence.

The final Session 8 celebrates the work of Konrad Zuse, whose Z4 computer ran at ETH Zürich from 1950 to 1955. The exposition spans his little-known anticipation, in the 1930s, of aspects of the stored-program concept, to his later hypothesis (Zuse's Thesis) holding that the physical universe, at its most fundamental level, and everything in it, including the human brain, is a computing machine.

Registration: phd@philos.uzh.ch

Details: http://www.philosophie.uzh.ch/doktorat/meisterkurse.html

Venue: University of Zurich
Friday: Rämistrasse 59, 8001 Zürich, Room RAA-E-29
Saturday: Karl Schmid-Strasse 4, 8006 Zürich, Room KO2-F-174

No fees apply. Participants are expected to have read the texts.
PhD students at the UZH are required to book the module in order to get credit points.

Programme and Readings

Friday, 14th December 2018

9:30 – 11:30: Testing for Minds–Rethinking Turing's Test

Proudfoot, D. (2013a). "Rethinking Turing's Test". In: *The Journal of Philosophy* 110.7, pp. 391–411.

*Turing, A. M. (1948). "Intelligent Machinery". In: *The Essential Turing*. Ed. by B.J. Copeland. Oxford: Oxford University Press, 410–432. [See also Copeland's introduction to this paper on pp. 395-409.]

12:00 – 13:00: The Origins of AI and the Computational Theory of Mind

*Copeland, B.J. (2017a). "Intelligent Machinery". In: *The Turing Guide*. Ed. by B.J. Copeland et al. Oxford: Oxford University Press. Chap. 25.

Proudfoot, D. and B.J. Copeland (2018). "Turing and the first electronic brains: What the papers said". In: *The Routledge Handbook of the Computational Mind*. Ed. by M. Sprevak and M. Colombo. Routledge, pp. 23–37.

14:30 – 16:30: Computation, Physics, and the Church–Turing Thesis

*Copeland, B.J. (2017b). "The Church-Turing Thesis". In: *The Stanford Encyclopedia of Philosophy*. Ed. by E. N. Zalta. Winter 2017. Metaphysics Research Lab, Stanford University.

Copeland, B.J. and O. Shagrir (2013). "Turing versus Gödel on Computability and the Mind". In: *Computability: Gödel, Turing, Church and Beyond*. Ed. by B.J. Copeland, C. Posy, and O. Shagrir. Cambridge, Massachusetts: MIT Press, pp. 1–33.

17:00 – 18:30: Zombie Consciousness

Campbell, D. I., B.J. Copeland, and Z. Deng (2017). "The Inconceivable Popularity of Conceivability Arguments". In: *Philosophical Quarterly* 67.267, pp. 223–240.

*Chalmers, D. J. (2010). *The Character of Consciousness*. ch. 6. Oxford: Oxford University Press.

Saturday, 14th December 2018

9:30 – 11:30: Mind Uploading–Science or Science Fiction?

*Chalmers, D. J. (2014). "Uploading: A Philosophical Analysis". In: *Intelligence Unbound: The Future of Uploaded and Machine Minds*. Ed. by R. Blackford and D. Broderick. Oxford: Wiley-Blackwell, pp. 102–118.

Proudfoot, D. (2013b). "Software Immortals: Science or Faith?" In: *Singularity Hypotheses: A Scientific and Philosophical Assessment*. Ed. by A. H. Eden et al. Heidelberg: Springer, pp. 367–392.

12:00 – 13:00: The Indeterminacy of Computation

*Dewhurst, J. (2018). "Individuation Without Representation". In: *British Journal for the Philosophy of Science* 69.1, pp. 103–116.

14:30 – 16:00: Computationalism and the Chinese Room Argument

Proudfoot, D. and B.J. Copeland (2012). "Artificial Intelligence". In: *Oxford Handbook of Philosophy of Cognitive Science*. Ed. by E. Margolis, R. Samuels, and S.P. Stich. Oxford: Oxford University Press, pp. 153–158, 164.

*Searle, J. (1980). "Minds, Brains and Programs". In: *Behavioral and Brain Sciences* 3.3, pp. 417–57.

16:30 – 18:30: Zuse's Thesis, Stored Programs, and the Zürich Computer

Copeland, B.J., O. Shagrir, and M. Sprevak (2018). "Zuse's Thesis, Gandy's Thesis, and Penrose's Thesis". In: *Physical Perspectives on Computation, Computational Perspectives on Physics*. Ed. by M. E. Cuffaro and S. C. Fletcher. Cambridge: Cambridge University Press, pp. 39–59.

*Copeland, B.J. and G. Sommaruga (2016). "The Stored-Program Universal Computer: Did Zuse Anticipate Turing and von Neumann?" In: *Turing's Revolution*. Ed. by G. Sommaruga and T. Strahm. Heidelberg: Springer, pp. 43–101.

Starred readings are compulsory; others optional.