

Philosophy of Notation: Historical and contemporary approaches

Wednesdays, 11:35am–2:25pm, Leacock 927

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Course description. In recent years philosophers of mathematics have increasingly turned their attention to mathematical practice, i. e., how mathematics is actually being done. A characteristic feature of mathematics and other theoretical sciences is the extensive use of distinctive notations. They have been considered as ‘epistemic tools’ (Klein 2002), ‘objects-to-think-with’ (Tolchinsky 2003), or ‘cognitive technologies’ (Dutilh Novaes 2012) that can be manipulated almost like physical objects (Landy et al. 2014). According to this conception, the influence between thoughts and notations goes *both* ways. That is, notations do not merely represent previously thought or spoken ideas, but through their use we also change our way of thinking. Despite the ubiquitous use of notations and the fact that the term ‘philosophy of notation’ was coined in 1885 by C. S. Peirce in his “On the Algebra of Logic: A Contribution to the Philosophy of Notations”, however, the question of *how* particular notations contribute to mathematical thinking and progress has rarely been investigated in a systematic fashion. The primary objective of this seminar is to look for new insights into the relation between symbolic notations and mathematical thought. In particular, we will focus on the historical contributions of Babbage, Frege, Peirce, and others, as well as contemporary discussions of notations by philosophers and cognitive scientists.

Prerequisites. Seminars are open only to graduate students and advanced undergraduate students, or by written permission of the instructor.

Reading materials will be made available on myCourses and in the library course reserve.

Requirements & grading. It is required that students prepare for and attend the meetings, and participate in the discussions (missing more than 20% of the meetings without a medical note will result in a 1/3 grade penalty). Depending on the class size, participants will be required to lead one or several seminar meetings. This includes selecting suitable readings of source material, preparing a short handout, and giving a 20-minute presentation at the beginning of the meeting. The *final grade* depends on weekly discussion notes (20%), in-class presentations (incl. selection of readings and preparation of a handout) (30%), and a 4000–5000 word term paper (50%). Late papers will be downgraded at a rate of 1/3 of a grade per day (e. g., from A- to B+, C to C-), including weekend days/holidays. Requests for extensions will be considered only when requested at least 24 hours before the paper or discussion note is due and substantiated by a written note.

“McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <http://www.mcgill.ca/students/srr/honest> for more information).”

“Instructor generated course materials (e. g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.”

“In accord with McGill University’s Charter of Students’ Rights, students in this course have the right to submit in English or in French any written work that is to be graded.”

“In the event of extraordinary circumstances beyond the University’s control, the content and/or evaluation scheme in this course is subject to change.”