

Application ACT2019 School

Leander Vignero

January 29, 2019

Background and General Info

I will obtain my PhD in October 2022.

One sentence summary: The topic of my PhD concerns philosophical logic and other formal methods in philosophy.

Availability in July: I am very committed to coming to Oxford and will most certainly come if I am selected, even if ACT2019 cannot provide funding.

Prior knowledge of category theory: I hold an MSc in Mathematics and I have done some courses on category theory. Moreover, I did my MSc thesis on homotopy type theory and got interested in categorical semantics. This prompted me to learn more about category theory and theoretical computer science as witnessed by my attending MGS 2018¹ and LICS 2018². Nowadays I am also interested in the interplay of philosophy and category theory.

Prior knowledge of philosophy of language and linguistics: During my BA and MA in philosophy I took some courses on philosophy of language, which is still actively researched in my department. This allows me to learn even more in seminars. After taking a course at ESSLLI 2018³, I got an idea for a paper in pragmatics. Specifically, I am researching the use of *weaseling*, the disingenuous use language. While doing this research, I also delved into linguistics.

This is my preferred order for the modules:

1. Formal and experimental methods to reason about dialogue and discourse using categorical models of vector spaces
2. Complexity classes, computation, and Turing categories
3. Traversal optics and profunctors
4. Partial evaluations, the bar construction, and second-order stochastic dominance
5. Toward a mathematical foundation for autopoiesis
6. Simplifying quantum circuits using the ZX-calculus

Of course, I have a *strong* preference for 1.

Relevance for my own research

Since I am researching the use of formal methods in philosophy, applying category theory to a philosophically relevant topic, like dialogue, is right up the alley of my PhD project; I am even organizing a reading group on category theory and philosophy at my home institution! Moreover, I have a profound and lasting interest in the two relevant fields: category theory and philosophy of language. My interest in category theory, on the one hand, is clear from the fact that I attend events like LICS and from the fact that I review books like Elaine Landry's (ed.) *Categories for the Working Philosopher* and Olivia

¹Midlands Graduate School on Theoretical Computer Science

²Logic in Computer Science

³European Summer School on Logic, Language and Information

Caramello's *Theories, Sites, Toposes*. My interest in (philosophy of) language, on the other hand, is clear from the fact that I am already doing research on the pragmatics of disingenuous language. I also believe that my background in type theory and logic more generally, will allow me to contribute fruitfully and productively. In summary, this school is tailor-made to fit both my research interests and my personal profile.

Leander Vignero

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Education

Academic Qualifications.....

- **KU Leuven**
○ *MA Philosophy, Summa Cum Laude* 2017–2018
Thesis on Dynamic Epistemic Logic
- **KU Leuven**
○ *MSc in Mathematics, Cum Laude* 2014–2017
Thesis on Homotopy Type Theory
- **KU Leuven**
○ *Bachelor Wijsbegeerte (BA Philosophy), Grote Onderscheiding (Magna Cum Laude)* 2014–2017
- **KU Leuven**
○ *Bachelor Wiskunde (BSc Mathematics), Minor Philosophy* 2011–2014

Additional Education.....

- **Midlands Graduate School in Theoretical Computer Science (MGS 2018)**
- **Logic in Computer Science (LICS 2018)**
- **European Summer School on Logic, Language and information (ESSLLI 2018)**

Language Skills

- **Natural Languages:** Proficient in Dutch (Native), English
- **Programming Languages:** Agda, Haskell, Java, Julia, R.
- **Markup Languages:** T_EX.

Employment

- **Institute of Philosophy** **KU Leuven**
○ *Doctoral student* October 2018–ongoing

Ongoing Academic Work

- **The Perfect Surprise**
○ *Journal Article, Collaboration with Lorenz Demey* July 2018– ongoing

Status: Revise and Resubmit at *Logic Journal of the IGPL*. This is an article version of my MA thesis in Philosophy.

A Computational Pragmatics for Weaseling

- *Journal Article, Single Author Paper* October 2018– ongoing
Status: Finishing touches before submission. This work is inspired by course I took at ESSLI 2018.

A Computational Pragmatics for Weaseling

- *Conference Talk* 2018– ongoing
Status: Accepted at *Formal Methods and Science in Philosophy III*.

Previous Academic Work

Conference Talks.....

- **The Perfect Surprise, a new analysis in dynamic epistemic logic.**
Conference Talk September 20, 2018
Status: Presented at *Young Researchers Days in Logic, Philosophy and History of Science VI*.

Book Reviews.....

- **“Categories for the Working Philosopher” by Elaine Landry (ed.)**
Book Review
Status: Published in *Tijdschrift voor Filosofie* 80 (2018), page 595-596.
- **“Theories, Sites, Toposes” by Olivia Caramello**
Book Review
Status: Forthcoming in *Tijdschrift voor Filosofie*.

Leuven, 28 January 2019

To whom it may concern.

I would hereby like to express, in the strongest possible terms, my support for Mr. Leander Vignero's application for the Applied Category Theory 2019 School.

Mr. Vignero is currently working on a PhD at the Institute of Philosophy at KU Leuven, with me as his co-supervisor. (His main supervisor is prof. dr. Sylvia Wenmackers.) Prior to entering the PhD programme, Mr. Vignero completed a master's degree in philosophy (with a thesis on dynamic epistemic logic) as well as a master's degree in mathematics (with a thesis on higher inductive types in homotopy type theory). In my opinion, he thus fits perfectly within the profile that the organisers of ACT2019 have in mind. As the co-supervisor of one of the research grants that supports Mr. Vignero's PhD research, I can also guarantee that there is sufficient funding available for his visit to Oxford in July.

Although he has only been a PhD student since October 2018, Mr. Vignero has already a substantial amount of research experience. For example, in the past few months, we have reworked his masters's thesis (which he wrote under my supervision) into a joint paper. This paper is now under review at the *Logic Journal of the IGPL*, with an initial verdict of 'revise and resubmit'. The fact that Mr. Vignero will likely be able to publish the results of his master's thesis in an internationally acclaimed journal, clearly bears witness to his talents and potential as a researcher.

Mr. Vignero's PhD project is focused on using formal methods to shed new light on long-standing philosophical issues. These formal methods include standard tools and techniques from logic and probability theory, but definitely also category theory. To give just one concrete example: Mr. Vignero is currently finishing a paper on strategic aspects of communication (e.g. 'weaseling' and plausible deniability) within a probabilistic model of cognition, and I think that Mehrnoosh Sadrzadeh's course on categorical models to reason about dialogue and discourse will provide an interesting new perspective on Mr. Vignero's ongoing research in this area.

Because of all these reasons, I think that Leander Vignero definitely has the potential to become a successful and independent researcher at the interface between philosophy, mathematics and computer science. Participating in the Applied Category Theory 2019 School would be the ideal next step on that path. I recommend him without any reservations.

Kind regards,



Dr. Lorenz Demey