

# ELLEN LEHET

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## AOS

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Philosophy of Mathematics

## AOC

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Epistemology, Philosophy of Science, Logic

## EMPLOYMENT

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<b>Assistant Professor</b> Utah Valley University, Developmental Mathematics Department	<i>August 2021 -</i>
<b>Postdoctoral Fellow</b> University of Notre Dame, Philosophy Department	<i>August 2020 - May 2021</i>

## EDUCATION

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<b>University of Notre Dame</b> Philosophy – Ph.D.	<i>August 2015 - May 2020</i>
Philosophy – M.A.	<i>August 2015 - May 2018</i>
<b>SUNY College at Potsdam</b> Mathematics – M.A.	<i>August 2013 - May 2015</i>
<b>SUNY College at Potsdam</b> Mathematics, Philosophy – B.A. Computer Science – Minor	<i>August 2011 - May 2015</i>

## DISSERTATION ABSTRACT

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**The Explanatory Value of Category Theory:** Category theory, an area of mathematics that categorizes theories in terms of objects and relations of those objects, is explanatory. This dissertation argues that the power of category theory lies in its unique structure, which produces analogies and generalizations. I first put forward an account of mathematical explanation that is informed by contemporary mathematical practice both in classroom teaching and in current research. I then discuss salient examples from contemporary mathematics to highlight how category theory produces analogies and generalizations. I conclude my project with the case study of an important result from algebraic topology (the van Kampen theorem).

**Committee:** Curtis Franks(advisor) ◊ Timothy Bays ◊ Patricia Blanchette ◊ Colin McLarty

**Defense Date:** April 6, 2020

## PUBLICATIONS

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“**Mathematical Explanation in Practice**” (forthcoming). *Axiomathes*.  
“**Reidemeister moves in Gauss diagrams**” (forthcoming). *Involve*. co-written with S. Ganzell, C. Lopez, G. Magallon, and A. Thompson.  
“**Impurity in Contemporary Mathematics**” (2021). *Notre Dame Journal of Formal Logic*, 62(1): 67-82  
“**Induction and Explanatory Definitions in Mathematics**” (2021). *Synthese*, 198, 1161–1175.

## PAPERS IN PROGRESS

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“Category Theory: Structure and Explanation” (R&R)  
“Understanding as the Aim of Mathematics”  
“Exemplification as a Means to Understanding in Mathematics”  
“The Abstract Subject Matter of Mathematics: Virtual Knot Theory”

## PRESENTATIONS

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“**Explanatory Definitions in Mathematical Practice**” August 2021  
at Topics in Philosophy of Mathematical Practice 2021 Mini-Conference (virtual), University of Copenhagen, invited speaker.

“**The Evolution of the Group Concept**” July 2021  
at the Sixth International Meeting of the Association for the Philosophy of Mathematical Practice (virtual).

“**Visualizing Mathematics**” February 2021  
for Conjunto No Vacio Semillero, Universidad de los Andes, invited speaker.

“**Mathematical Explanation as a Means to Understanding**” December 2019  
at Explanation and Understanding within Mathematics Workshop, Vrije Universiteit Brussel.

“**Understanding as the Aim of Mathematics**” November 2019  
at Notre Dame Philosophy Colloquium, elected graduate student speaker.

“**The Explanatory Value of Category Theory**” November 2019  
at Midwest Philosophy of Math Workshop, University of Notre Dame.

“**Understanding as the Aim of Mathematics**” November 2019  
at Novembertagung 2019, Institut de Recherche Mathématique Avancée, Université de Strasbourg.

“**The Explanatory Value of Category Theory**” October 2019  
at Category Theory OctoberFest 2019, Johns Hopkins University.

“**The Explanatory Value of Category Theory**” October 2019  
at UConn Logic Colloquium, University of Connecticut, invited speaker.

“**Impurity in Contemporary Mathematics**” March 2019  
at Mathematics in Philosophy: Purity and Idealization, University of Notre Dame.

“**Rigor and Intuition in Topology: The Development of the Poincaré Conjecture**” May 2018  
at Masterclass in the Philosophy of Mathematical Practice, Vrije Universiteit Brussel.

## TEACHING EXPERIENCE

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**at Utah Valley University**  
MAT 950: Foundations for Algebra *Fall 2021*  
MAT 1010: Intermediate Algebra *Fall 2021*

**at University of Notre Dame**  
PHIL 10101: Introduction to Philosophy *Summer 2021*  
PHIL 20656: Methods of Reasoning *Spring 2021*  
PHIL 20640: Philosophy of Mental Illness *Fall 2020 & Winter 2020-21*  
PHIL 20635: Theory of Knowledge *Spring 2019*  
TA for Jeff Speaks’ PHIL 10100: Introduction to Philosophy *Fall 2017*  
TA for Curtis Franks’ PHIL 31300: Formal Logic *Spring 2017*  
TA for Jeff Speaks’ PHIL 10100: Introduction to Philosophy *Fall 2016*

**Outstanding Graduate Student Teacher Award** *Spring 2018*  
from Kaneb Center for Teaching & Learning

## SERVICE

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Referee for <i>Axiomathes</i>	<i>2020-2021</i>
Member of Organizing Committee for 2020 Midwest Philosophy of Math Workshop	<i>Fall 2020</i>
Member of Recruitment Planning Committee	<i>Spring 2016-Spring 2020</i>
Graduate Student Colloquium Co-Founder and Co-Organizer	<i>Fall 2016-Spring 2020</i>
Graduate Student Mentor	<i>Fall 2018-Spring 2020</i>
Session Chair — Eastern APA	<i>January 2019</i>
Referee for ND/NW Epistemology Conference	<i>Spring 2017</i>