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AOS Philosophy of Science, Philosophy of Physics

AOC Asian Philosophy, Epistemology, Logic

EDUCATION **The Ohio State University**, Columbus, Ohio USA

Ph.D., Philosophy, December 2006

M.A., Philosophy, June 2004

Saint Francis College, Loretto, Pennsylvania USA

B.A., *magna cum laude*, Philosophy with minors in Mathematics and History, June 2000

DISSERTATION **Title:** *Ineliminable Idealizations, Phase Transitions, and Irreversibility*

Committee: Robert W. Batterman (advisor), Neil Tennant (co-advisor), Stewart Shapiro, Robert Perry (Physics Department)

Abstract: Attached

PUBLICATIONS

COMMENTARY (with Kevin Coffey) “Synopsis”, in *Proceedings: The Robert and Sarah Boote Conference in Reductionism and Anti-Reductionism in Physics* (University of Pittsburgh: April 2006), online at <http://philsci-archive.pitt.edu/archive/00002822/>

ARTICLES “The Logic of Soku in the Kyoto School”, *Philosophy East and West* 54:3 (July 2004)

PRESENTATIONS “Resolving the Bayesian Problem of Idealization”, American Philosophical Association Central Division Meeting, Chicago, April 2007.

“Resolving the Bayesian Problem of Idealization”, Confirmation, Induction and Science Conference, London School of Economics, March 2007.

“Is ‘Interference’ the Solution to the Knowability Paradox?”, University of Iowa Graduate Philosophical Society’s 2nd Annual Graduate Conference, University of Iowa, April 2006.

“Idealized Explanations as Ontological Guides”, Indiana Philosophical Association Spring Meeting, Marian College, April 2006.

“Interference and the Knowability Principle”, 13th Annual May 4th Philosophy Graduate Student Conference, Kent State University, March 2006.

“Anti-Realism and Epistemic Progress”, Midsouth Philosophy Conference, University of Memphis, February 2006.

“Knowability, Undecidability, and Progressive Epistemic Situations”, Alabama Philosophical Society Annual Conference, University of Montevallo, October 2005.

“Evidentialism and Electromagnetism”, Ohio Philosophical Association, University of Cincinnati, April 2005.

“Constrained Evidentialism”, 12th Annual May 4th Philosophy Graduate Student Conference, Kent State University, March 2005.

Comment on Charles Hermes’ “Breaking the Laws in the Closest Counterfactual Worlds”, Midsouth Philosophy Conference, University of Memphis, February 2006.

“Method for Deriving the Principle Unit Normal Vector for Two-Space Vectors,” Kappa Mu Epsilon Mathematics Honor Society Regional Convention, Muskingum College, March 2000.

HONORS AND AWARDS

Graduate Student Travel Stipend Award, Central Division APA, 2007

Nominee, Graduate Associate Teaching Award, OSU, 2004 - 2005; 2005 - 2006; 2006 - 2007

William H. Fink Prize, Best Philosophy Graduate Student Paper, OSU, 2002

Delta Epsilon Sigma (National Catholic Honor Society) Fellowship, 2000 - 2001

University Fellowship, Ohio State University, 2000 - 2001

Delta Epsilon Sigma, National Catholic Honor Society, Chi Chapter, 2000

Kappa Mu Epsilon, Mathematics Honor Society, Pennsylvania Mu Chapter, 2000

Phi Alpha Theta, Honor Society in History, Alpha Alpha Beta Chapter, 2000

Outstanding Student Award, Department of Philosophy, 1998 - 1999; 1999 - 2000

President’s Scholarship, 1995 - 1999

SERVICE

Graduate Students’ Representative, 2001 - 2002; 2004 - 2005

Graduate Student Conference Organizing Committee, 2006-2007

Graduate Students’ Ombudsperson, 2005 - 2006

Technical Engineer, *Contemporary Philosophy*, Autumn 2000 - Spring 2005

“Faculty Friend” to Morrill Tower Floor 4, 2003 - 2004

Undergraduate Students’ Representative, 2000 - 2001

MEMBERSHIPS

American Philosophical Association, 1998 - present

Ohio Philosophical Association, 2005 - present

Philosophy of Science Association, 2005 - present

Society for Asian and Comparative Philosophy, 2007 - present

TEACHING
EXPERIENCE

The Ohio State University, Columbus, Ohio USA

Instructor

Philosophy 215: Asian Philosophy
Philosophy 150: Introduction to Logic and Critical Thinking
Philosophy 101: Introduction to Philosophy
Philosophy 367: Contemporary Social and Moral Problems in the United States

Facilitator for University-Wide Teaching Assistant Orientation

Facilitating Classroom Discussion
Preparing for the First Day
Teaching in the Independent Course

Teaching Assistant

Ancient Philosophy (*Philosophy 301*); Winter 2002
Philosophy of Religion (*Philosophy 270*); Autumn 2002
Symbolic Logic (*Philosophy 250*); Spring 2004
Asian Philosophy (*Philosophy 215*); Spring 2003
Probability, Data, and Decision Making (*Philosophy 153*); Spring 2006
Introduction to Ethics (*Philosophy 130*); Spring 2002
Introduction to Philosophy (*Philosophy 101*); Autumn 2001; Winter 2003

For further information, please see the teaching portfolio enclosed in my full dossier.

GRADUATE
COURSEWORK

Philosophy of Physics and Philosophy of Science

General Issues in Philosophy of Science (Robert Batterman - audit)
Scientific Revolutions (Neil Tennant)
Explanation, Reduction, Emergence (Robert Batterman)
Sklar's *Theory and Truth* (Robert Batterman)
Emergence in Physics and Philosophy of Mind (Robert Batterman)

Physics

Introductory Quantum Mechanics I (Robert Perry)
Introductory Quantum Mechanics II (Robert Perry)
Thermodynamics and Statistical Mechanics I (Ralf Bundschuh)
Survey of Current Research Problems (Thomas Humanic)

Epistemology and Metaphysics

General Issues in Epistemology (George Pappas)
Theories of Knowledge (Marshall Swain)
Theories of Epistemic Justification (George Pappas)
Philosophy of Perception (Louise Antony - audit)

Logic

Advanced Symbolic Logic (Stewart Shapiro)
Nonclassical Logics (George Schumm)
Advanced Logical Theory - Incompleteness (Neil Tennant)

Philosophy of Language

Wittgenstein's *Philosophical Investigations* (Allan Silverman)
Carnap and Quine (Robert Kraut)
Semantic Anti-Realism (Neil Tennant)
Truth and Knowability (Neil Tennant - audit)

History of Philosophy

Plato's *Republic* (Allan Silverman)
Aristotle's *Metaphysics* (Allan Silverman - audit)
Cause and Explanation in Ancient Greek Philosophy (Sylvia Berryman)
Locke's *Essay* (George Pappas)
Kant's Transcendental Idealism (Lisa Shabel)
Kūkai and Shingon Buddhist Philosophy (Thomas Kasulis - unofficial audit)
Shinran and Shin Buddhism (Thomas Kasulis - unofficial audit)
Modern Japanese Philosophy (Thomas Kasulis)

Value Theory

Philosophy of Mass Art (Lee Brown)
The Metaphysics of Morality (Justin D'Arms and Robert Kraut)

REFERENCES

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Philosophy of Science
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London, Ontario N6A 3K7 Canada
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ABSTRACT

The dissertation examines two putative explanations from statistical mechanics with the aim of understanding the nature and role of idealizations in those accounts, namely, the Yang-Lee account of phase transitions and the Boltzmannian account of irreversible behavior. Like most explanations in physics, these accounts involve idealizations to some extent. That is, some of the descriptions involved in the explanations are not entirely true of the systems under investigation. Many idealized explanations hold out the hope that the idealizations can be removed or eliminated with further work. However, the idealizations that occur in the accounts of phase transitions and irreversibility are ineliminable. The only way (in principle) to obtain a description – let alone an explanation – of these phenomena is to invoke various idealizing assumptions.

Ineliminably idealized explanations are not well-understood from a philosophical point of view. Indeed, most philosophers of science would probably hold that no idealizations are ineliminable. The dissertation argues that this view is mistaken and shows where and why extant accounts of idealization miss this fact. The main component of this argument is a distinction between the widely-accepted understanding of idealizations as distortions and a novel understanding of idealizations as abstractions. As distortions, idealizations are false claims about the way the world is. As abstractions, however, idealizations are not claims at all; instead, they are devices for ignoring certain details about the real world. The dissertation argues that ineliminable idealizations cannot be distortions, and that they should be understood as abstractions.

In addition to accommodating the existence of ineliminable idealizations, treating idealizations as abstractions rather than distortions illuminates issues about the confirmation of idealized hypotheses and their role as guides to what the world is like. At least some idealized hypotheses have some non-zero degree of confirmation; and less idealized hypotheses tend to be better confirmed than their more idealized counterparts. If idealizations are distortions, Bayesian confirmation theory seems unable to obtain these results, because it lacks a way of defining the prior probabilities of idealized hypotheses. If idealizations are abstractions, however, then idealized hypotheses about a system are incomplete (but not necessarily false) claims that leave aside certain details about the system. Since prior probabilities are assigned to such hypotheses in the same way they are assigned to incomplete descriptions, understanding idealizations as abstractions allows Bayesianism to secure the above-mentioned results. Moreover, this understanding of idealized hypotheses allows such hypotheses to be guides to what the world is like, because the incompleteness of idealized hypotheses is compatible with the cogency of inference to the best explanation.