

EME '23

DALHOUSIE UNIVERSITY, HALIFAX

SMS 8

8th Annual Conference of the Society for the
Metaphysics of Science

10-12 August 2023
Dalhousie University
Halifax, NS, Canada

Foreword

Message from the President

On behalf of the SMS officers and the program committee, I would like to welcome you to the eighth annual conference of the Society for the Metaphysics of Science, held August 10-12, 2023, at Dalhousie University in Halifax, Nova Scotia.

We have an outstanding program in store, with papers that showcase the breadth and depth of top notch research currently taking place in this area of philosophy. I am especially looking forward to our keynote address from Quayshawn Spencer, which will take place on Saturday. On Thursday afternoon we will have the annual business meeting for the society, which is open to all. We would love to have you—yes, you!—attend and get involved in the leadership of the society.

Putting together this event has involved the hard work of many. Particular thanks are due to the program committee, headed by Sam Baron, to Ken Aizawa and Mike Hicks for organizing the SMS Summer School, and to Tyler Hildebrand who has gone above and beyond this year as both the secretary of the society and the local organizer for the conference. Thanks also to the Department of Philosophy at Dalhousie University for hosting us and to the *Canadian Journal of Philosophy* for their financial support. Last but not least, thank you to all the speakers and commentators whose contributions make this such a high quality event.

It has been a pleasure to serve as president this year. I look forward to seeing you all around Halifax over the course of the next few days.

Nina Emery

Table of Contents

1. The SMS	3
2. Schedule	4
3. Abstracts	7
4. Practicalities	15
5. Sponsors	17

The SMS

Officers

President: Nina Emery (Mt. Holyoke College)
President-elect: Kenneth Aizawa (Rutgers University, Newark)
Past-President: Tuomas Tahko (University of Bristol)
Secretary: Tyler Hildebrand (Dalhousie University)
Treasurer: Peter Tan (Fordham University)

Elected Council Members

Giuliano Torrenco (Università degli Studi di Milano)
Jo Wolff (University of Edinburgh)
Alastair Wilson (University of Birmingham)
Katie Robertson (University of Stirling)
Michael Townsen Hicks (University of Glasgow)

2023 Program Committee

Chair: Sam Baron (Australian Catholic University)
Claudio Calosi (University of Geneva)
Karen Crowther (University of Oslo)
Finnur Dellsén (University of Iceland)
Heather Demarest (University of Colorado, Boulder)
Nick Huggett (University of Illinois, Chicago)
Baptiste Le Bihan (University of Geneva)
Kate Lynch (University of Sydney)
Kristie Miller (University of Sydney)
James Norton (University of Iceland)
James Read (University of Oxford)
Katie Robertson (University of Birmingham)
Jessica Wilson (University of Toronto)

2023 Local Organizer

Tyler Hildebrand (Dalhousie University)

About the society

The Society for the Metaphysics of Science (SMS) is an international scholarly organization that promotes work in the metaphysics of science. The SMS embraces traditional philosophical inquiry into topics relevant to science (e.g., laws, time, space, etc.) as well as “science-first” methods of practicing metaphysics (e.g., ontology of quantum physics, the nature of mechanisms in biology, etc.). We host an annual conference, rotating between in-person events in North America and the rest of the world (usually Europe), with a fully online conference every third year.

For more information about the society, see our website: <https://socmetsci.org>

Thursday, 10 August

	Room 1: 2118	Room 2: 2016	Room 3: 2021
<i>Coffee and Snacks at 9:00 in the Atrium</i>			
9:30-10:30		<p>João Silva, "Assessing Howard Robinson's criticism of hylomorphism"</p> <p>Comments: Erica Shumener</p> <p><i>Chair: Anthony Dardis</i></p>	<p>Baptiste Le Bihan & Sam Baron, "Grounding spacetime in causation"</p> <p>Comments: Ulrich Meyer</p> <p><i>Chair: Jerome Romagosa</i></p>
10:35-11:35	<p>Gunnar Babcock, "Functions without goals?"</p> <p>Comments: Matthew Tugby</p> <p><i>Chair: Alexander Geddes</i></p>	<p>Kenneth Aizawa, "Implementation: A small-g grounding relation at work in science"</p> <p>Comments: Mack Sullivan</p> <p><i>Chair: Anthony Dardis</i></p>	<p>Steven Canet, "Neo-Spinozist substances and the hole argument"</p> <p>Comments: Zee Perry</p> <p><i>Chair: Jerome Romagosa</i></p>
<i>Lunch Break from 11:35 - 13:10</i>			
13:10-14:10	<p>Alexander Geddes, "Biological individuality, pluralism, and a fallacy of composition"</p> <p>Comments: Ford Doolittle</p> <p><i>Chair: Gunnar Babcock</i></p>	<p>David Builes, "Non-Humeanism and determinism"</p> <p>Comments: Heather Demarest</p> <p><i>Chair: Erica Shumener</i></p>	<p>Ray Pedersen, "For one dendritic world"</p> <p>Comments: Jerome Romagosa</p> <p><i>Chair: Sabrina Hao</i></p>
14:15-15:15	<p>Matthew Tugby, "Functions, goals, and the problem of goal failure"</p> <p>Comments: João Silva</p> <p><i>Chair: Gunnar Babcock</i></p>	<p>Lisa Leininger, "A (moderately Humean) guide to 'Holding the world together'" (cancelled)</p> <p>Comments: Shelly Yiran Shi</p> <p><i>Chair: Erica Shumener</i></p>	<p>Stephan Hartmann, "The open systems view and the Everett interpretation"</p> <p>Comments: Eugene Chua</p> <p><i>Chair: Sabrina Hao</i></p>
<i>Afternoon break from 15:15 - 15:30</i>			
15:30-17:00	SMS Business Meeting		

Friday, 11 August

	Room 1: 2118	Room 2: 2016	Room 3: 2021
<i>Coffee and Snacks at 9:00 in the Atrium</i>			
9:30-10:30	David Oderberg & Ingo Bojak , "Biological mistake theory and the question of function" Comments: Gunnar Babcock <i>Chair: Matthew Tugby</i>	Mack Sullivan , "Lawlessness" Comments: Jennifer McDonald <i>Chair: Gabrielle Kerbel</i>	Sabrina Hao , "What are scientists talking about when they talk about particles?" Comments: Chanwoo Lee <i>Chair: Baptiste Le Bihan</i>
10:35-11:35	Matthew Slater , "Natural kinds in crisis" Comments: Neil Williams <i>Chair: Matthew Tugby</i>	Ulrich Meyer , "Best systems in lawless worlds" Comments: Travis McKenna <i>Chair: Gabrielle Kerbel</i>	Sebastian Murgueitio Ramirez , "Dynamical dispositions and geometrical structures" Comments: Alexandre da Eira <i>Chair: Baptiste Le Bihan</i>
<i>Lunch Break from 11:35 - 13:10</i>			
13:10-14:10	Jennifer McDonald , "What causal models bring to the table" Comments: Sander Beckers <i>Chair: Neil Williams</i>	Gabrielle Kerbel & Travis McKenna , "What is a fundamental law?" Comments: Chris Haufe <i>Chair: Tyler Hildebrand</i>	Alex LeBrun , "Equivalent theories and ontological commitment" Comments: Anthony Dardis <i>Chair: Sebastian Murgueitio Ramirez</i>
14:15-15:15	Tyler Millhouse , "When levels intervene" Comments: Travis LaCroix <i>Chair: Neil Williams</i>	Christopher Meacham , "Constraint accounts of laws" Comments: Michael Townsen Hicks <i>Chair: Tyler Hildebrand</i>	Chanwoo Lee , "Metaphysical Perspicuity" Comments: Alex LeBrun <i>Chair: Sebastian Murgueitio Ramirez</i>
<i>Afternoon break from 15:15 - 15:30</i>			
15:30-17:00	Presidential Address in the ScotiaBank Auditorium Nina Emery "Two Types of Naturalism in Metaphysics"		

Saturday, 12 August

	Room 1: 2118	Room 2: 2016	Room 3: 2021
<i>Coffee and Snacks at 9:00 in the Atrium</i>			
9:30-10:30		Anthony Dardis , "Different past compatibilism" Comments: Alyssa Ney <i>Chair: Travis McKenna</i>	Jerome Romagosa , "De-centering the Everett interpretation" Comments: Ryan Miller <i>Chair: Sam Baron</i>
10:35-11:35		Bixin Guo , "Can Humeans be scientific realists?" Comments: Nina Emery <i>Chair: Travis McKenna</i>	Eugene Chua , "Time's emergence and physical coherence" Comments: Ray Pedersen <i>Chair: Sam Baron</i>
<i>Lunch Break from 11:35 - 13:10</i>			
13:10-14:10	Marissa Bennett & Michael Miller , "The conventionality of real-valued quantities" Comments: Sebastian Murgueitio Ramirez <i>Chair: Sam Baron</i>	Will Moorfoot , "Indeterministic grounding and physicality" Comments: Gabrielle Kerbel <i>Chair: Jenn McDonald</i>	Yi-Cheng Lin , "A new theory of the passage of time" Comments: Lisa Leininger <i>Chair: Eugene Chua</i>
14:15-15:15	Zee Perry , "Against quantitative primitivism" Comments: Mahmoud Jalloh <i>Chair: David Builes</i>	Ryan Miller , "Lonergan's oddly strong theory of emergence" Comments: Tyler Millhouse <i>Chair: Jenn McDonald</i>	Jacopo Giraldo , "Geometry and measure of spatial extension" Comments: Marissa Bennett <i>Chair: Eugene Chua</i>
<i>Afternoon break from 15:15 - 15:30</i>			
15:30-17:00	Keynote Address in the ScotiaBank Auditorium Quayshawn Spencer "A Metaphysical Mapping Problem for Race Theorists and Human Population Geneticists"		

Abstracts

Presidential Address: Nina Emery (Mt. Holyoke College)

TWO TYPES OF NATURALISM IN METAPHYSICS

In this talk, I argue for an important relationship between two types of naturalism in metaphysics. In particular, I argue that if one is a *content naturalist*—if one thinks that good metaphysical theories should not conflict with the content of our best scientific theories—then one also must be a *methodological naturalist*—one must respect the methodology of science when choosing between metaphysical theories. I then explore the consequences that follow from this relationship. Ultimately I claim that regardless of whether one chooses to accept both types of naturalism or reject both, contemporary metaphysics ought to look quite different than it currently does.

Keynote Lecture: Quayshawn Spencer (University of Pennsylvania)

A METAPHYSICAL MAPPING PROBLEM FOR RACE THEORISTS AND HUMAN POPULATION GENETICISTS

In this talk, I identify and clarify a mapping phenomenon that's almost twenty years old. The phenomenon is that the populations at a fivefold subdivision of humans into biological populations—the so-called human continental populations—correspond one-to-one with the five official races of the Office of Management and Budget in the US government. This phenomenon has raised the interesting philosophical question of what exactly is the metaphysical relation being exemplified by this particular mapping. Metaphysicians of race have offered multiple different theories. Most importantly, Levin thinks that it's co-exemplification of a certain kind of biological population, Ásta has argued that it's a function of tracking, Hardimon has argued that it's co-exemplification of minimalist race, and Taylor thinks that the relation is (at best) co-extension. However, in this paper, I argue that the metaphysical relation that's exemplified is identity. After presenting and defending *the identity thesis*, I explore interesting implications of the identity thesis for race theorists and NIH-funded medical scientists.

Abstracts of accepted papers

Aizawa, Kenneth

IMPLEMENTATION: A SMALL-G GROUNDING RELATION AT WORK IN SCIENCE

Some metaphysicians have recently proposed that an ontological dependence relation of "Big-G" Grounding plays a role in understanding what it is for some things to hold "in virtue of" something else. See, for example, (Fine, 2012), (Rosen, 2010), (Schaffer, 2009, 2012). By contrast, (Wilson, 2014) has argued that there is "no work" for a Big-G Grounding relation to do. Instead, such work as Ground might do is, in fact, done by other "small-g" ontological dependence relations. In this paper, I join "Team Wilson." I will 1) describe a "small-g" ontological dependence relation, implementation, 2) describe how implementation differs from at least familiar conceptions of Ground, and 3) describe some of the work that implementation does in science. In brief, the work is this. Scientists sometimes use implementation in singular dynamical compositional (SDC) explanations. Further, scientists sometimes embed SDC explanations in SDC abductive inferences. As an illustration of these last two claims, I discuss Alan Hodgkin and Andrew Huxley's explanation of how sodium carries the initial inward current of the action potential (Hodgkin & Huxley, 1952). Although I do not here go as far as Wilson in arguing that there is no work for Ground; I do argue that a small-g ground relation of implementation does scientific work that *prima facie* Ground does not.

Babcock, Gunnar

FUNCTIONS WITHOUT GOALS

The goal of this paper is to show that Wright's argument for separating functions from goals is problematic. It treats behaviors as though they are fundamentally different than activities, and it mistakenly understands objects, like chairs, as being unable to perform actions. In arguing for against Wright's distinction, my aim is not to dredge up the past for argument's sake, but rather to question what the precise relations are between teleology, goal directedness, and functions.

This has seldom been done since Wright introduced his distinction. And, if functions are intractably bound up with goal directedness, then they are not as conceptually distinct as they're often treated in the literature. Not realizing that fact might be stifling our ability to provide an uncontroversial and truly naturalistic account of functions.

Bennett, Marissa & Miller, Michael

THE CONVENTIONALITY OF REAL VALUED QUANTITIES

The representational theory of measurement provides a collection of results that specify the conditions under which an attribute admits of numerical representation. The original architects of the theory interpreted the formalism operationally and explicitly acknowledged that some aspects of their representations are conventional. There have been a number of recent efforts to reinterpret the formalism to arrive at a more metaphysically robust account of physical quantities. In this paper we argue that the conventional elements of the representations afforded by the representational theory of measurement require careful scrutiny as one moves toward such an interpretation. To illustrate why, we show that there is a sense in which the very number system in which one represents a physical quantity such as mass or length is conventional. We argue that this result does not undermine the project of reinterpreting the representational theory of measurement for metaphysical purposes in general, but it does undermine a certain class of inferences about the nature of physical quantities that some have been tempted to draw.

Builes, David

NON-HUMEANISM AND DETERMINISM

According to Non-Humean theories of natural necessity, there is some sort of fundamental natural necessity in the world, which is supposed to guarantee the regularity of the universe. The goal of this paper is to explore some potential tensions between Non-Humean theories and the empirical possibility that the laws of physics are deterministic. I first argue that two orthodox versions of NonHumeanism face certain theoretical drawbacks if determinism is true, and then I present two speculative versions of Non-Humeanism that avoid these drawbacks. I conclude by arguing that the best way for Non-Humeans to avoid these tensions with determinism is to adopt a view where reality is fundamentally nonspatiotemporal and "holistic", in a certain precise sense.

Canet, Steven

NEO-SPINOZIST SUBSTANCES AND THE HOLE ARGUMENT

The Hole Argument, as developed by Earman and Norton, claims to show that any substantivalist interpretation of general relativistic spacetime will be illicitly indeterministic. In this paper, I present a novel substantivalist response to the Hole Argument. I first present the Hole Argument, showing how it is meant to undermine a substantivalist view of spacetime. I then introduce a Neo-Spinozist conception of substances according to which the fundamental entities are everywhere-present fields, and the substance as a whole has metaphysical priority over any parts or portions thereof. Finally, I show how this view, when applied to spacetime substances, yields a theory that is able to overcome the Hole Argument.

Chua, Eugene

TIME'S EMERGENCE AND PHYSICAL COHERENCE

It is said that time disappears in quantum gravity. Yet time seems to exist in our world. This raises a question of how, if at all, time exists. One response is to 'walk the middle way' between fundamentally timeless physics and manifestly temporal reality by deriving time from timeless physics. If successful, the middle way explains why time emerges non-fundamentally, despite timeless physics. However, Baron, Miller & Tallant (2022) recently argued that this approach faces metaphysical incoherence: the metaphysics of emergence requires spatiotemporality, and can't be coherently applied to a fundamentally non-spatiotemporal world. I augment this worry and argue that the middle way also risks physical incoherence. Explanatory projects in physics seeking to derive time from timeless reality might employ temporally laden concepts, running into circularity. I illustrate this worry with two proposals for time's emergence: the semiclassical and thermal time programs.

Dardis, Anthony

DIFFERENT PAST COMPATIBILISM

Determinism appears to rule out freedom, by way of entailing that one never actually has the ability to do otherwise than what one actually does. Modal difference compatibilism says that doing otherwise happens in a possible world that differs from the actual world either in its past or in its laws. Lewis famously argued for "local-miracle compatibilism" (LMC), holding that the difference is in the laws. "different past compatibilism" (DPC) holds that the difference is in the past. Lewis took pains to show that agents have no miraculous abilities: doing otherwise never involves a counterfactual agent performing what would be a miracle in the actual world. A consistent theme in critical responses to Lewis is that despite these pains his view is committed to saying that agents do have miraculous abilities. This paper argues for a strategy for blocking this kind of response.

Geddes, Alexander

BIOLOGICAL INDIVIDUALITY, PLURALISM AND A FALLACY OF COMPOSITION

Recent work in the philosophy of biology commonly distinguishes between evolutionary and physiological accounts of biological individuality, accounts which appear to conflict in their verdicts concerning which organic entities and pluralities are to be counted as biological individuals. Many respond to this apparent conflict by endorsing pluralism, according to which there are in fact at least two roughly human-shaped, organism-like entities where you are: an evolutionary individual and a physiological individual, differing in their composition and nature. In this paper, I argue that this pluralistic response is mistaken. For the central insights of evolutionary and physiological accounts of biological individuality can instead be harmonised by taking them to address, in the first instance, distinct questions. And the appearance of conflict can be explained away as resulting from mistaken assumptions concerning the ways in which answers to these questions must relate—assumptions that amount to fallacies of composition.

Giraldo, Jacopo

GEOMETRY AND MEASURE OF SPATIAL EXTENSION

In this paper I present a novel account of Spatial Extension (SE) according to which to be Spatially Extended is to be Extended Simpliciter (SEES). A spatial entity is extended simpliciter if and only if some part of it is one-dimensionally Lebesgue-extended. By contrast with the mereological account of SE (SEME), whereby being spatially extended boils down to owning a mereologically complex exact location, SEES provides a physics-like measure of SE. As opposed to the Lebesgue account of SE (SELE), whereby being spatially extended coincides with owning a positive exact location's Lebesgue measure, extension simpliciter is absolute rather than relative to the geometrical dimensions in which entities are exactly located. I defend that a physics-like measure and the geometrical absoluteness are essential to a correct characterization of SE. Therefore, I conclude that SEES is a better candidate, at least in these respects, than both SEME and SELE.

Guo, Bixin

CAN HUMEANS BE SCIENTIFIC REALISTS?

Many philosophers who defend a Humean account of laws of nature also endorse scientific realism, such as David Lewis and Barry Loewer. It seems as if scientific realism and Humean accounts are orthogonal to, and so compatible with, one another. I argue otherwise: Humean accounts of laws are at odds with scientific realism, and reconciling them requires significant changes to the standard formulation of scientific realism or of Humean accounts. In this paper, I focus on one prominent Humean account, Loewer's Package Deal Account, which takes the fundamental ontology and laws to be a package deal and metaphysically on a par. I argue that it has the implication of making the fundamental ontology of physics not objective, which conflicts with standard scientific realism. (For Humean accounts that do not take a package deal such as Lewis's account, I argue that they do not conform to scientific practice.)

Hao, Sabrina

WHAT ARE SCIENTISTS TALKING ABOUT WHEN THEY TALK ABOUT PARTICLES?

Revisionary ontologies of scientific theories are the ones that largely differ from the ontological commitments postulated by language in scientific practice. In quantum theories, especially non-relativistic quantum mechanics (NRQM), particles such as electrons and Hydrogen atoms have played a central role in the theory's experimentation and application. In this paper, I argue that

if we were to take a realist attitude towards quantum theories, we are not justified to neglect language in scientific practice and adopt a revisionary ontology that does not involve particles. I first consider the general question of why we need to care about scientists' language, and respond to two main objections. I then consider two objections to the particle concept in quantum theories. At last, I consider wavefunction realism as a case study, and show that it fails to account for the particle concept used in scientific practice.

Hartmann, Stephan

THE OPEN SYSTEMS VIEW AND THE EVERETT INTERPRETATION

It is argued that those who defend the Everett, or 'Many Worlds', interpretation of quantum mechanics should embrace what we call the general quantum theory of open systems (GT) as the proper framework in which to conduct foundational and philosophical investigation in quantum physics. GT is a wider dynamical framework than its alternative, standard quantum theory (ST). This is true even though GT makes no modifications to the quantum formalism. GT rather takes a different view, what we call the open systems view, of the formalism; i.e., in GT the dynamics of systems, whose physical states are fundamentally represented by density operators, are represented as fundamentally open as specified by an in general non-unitary dynamical map. This includes, in principle, the dynamics of the universe as a whole. We argue that the more general dynamics describable in GT can be physically motivated, that there is as much empirical support, if not more, for GT as there is for ST, and that GT is fully in the spirit of the Everett interpretation. There is, in short, little reason for an Everettian not to embrace GT as the preferred theoretical framework for quantum physics.

Kerbel, Gabrielle & McKenna, Travis

WHAT IS A FUNDAMENTAL LAW?

If we want to inquire about the fundamental structure of reality, it is natural to think that we may be able to turn to scientific laws of nature for help. But which of these laws are well-suited for telling us about fundamental structure? One ostensibly straightforward answer is that the fundamental laws of nature are the right laws for this work. In this paper, we argue that this answer is not, in fact, straightforward. Looking to analyses of what makes laws fundamental in both science and philosophy of science, we argue that neither discipline has a definition of fundamental law that appropriately captures those laws which are well-suited to tell us about fundamental structure. We conclude that identifying this issue has important upshots for how we should frame debates about the relationship between fundamental laws and derivative properties in metaphysics and the philosophy of science.

Le Bihan, Baptiste & Baron, Sam

GROUNDING SPACETIME IN CAUSATION

We develop a new version of the causal theory of spacetime. Whereas traditional versions of the theory seek to identify spatiotemporal relations with causal relations, the version we develop takes causal relations to be the grounds for spatiotemporal relations. Causation is thus distinct from, and more basic than, spacetime. We argue that this non-identity theory, suitably developed, avoids the challenges facing the traditional identity theory.

LeBrun, Alex

EQUIVALENT THEORIES AND ONTOLOGICAL COMMITMENT

The literature on theoretical equivalence in philosophy of physics is replete with physical theories that look quite different but are purportedly equivalent. Plausibly, there might exist a pair of equivalent theories that look different insofar as they existentially quantify over different entities. However, given the preeminence of the quantificational theory of ontological commitment, which tells us to look to quantified entities to inform ontology, such a pair of theories seems to be a problem. In this paper, I argue that the existence of physically equivalent theories that existentially quantify over different entities begets a dilemma for a proponent of the quantificational theory of ontological commitment. I conclude that there is no way out of the dilemma and that we should reject the quantificational theory of ontological commitment.

Lee, Chanwoo

METAPHYSICAL PERSPICUITY

Scientific theories often allow multiple different formulations, e.g., classical mechanics allows Lagrangian and Hamiltonian formulations. While we count these formulations as equally true, the recent literature has suggested that one formulation can still be more metaphysically perspicuous than another. This paper provides a new account of the notion of metaphysical perspicuity. The present account offers both descriptive and revisionary components: First, as a descriptive component, we examine how the notion of metaphysical perspicuity is used in the recent works by Jill North. This will show how metaphysical perspicuity can be characterized in terms of directness and objectivity. Second, as a revisionary component, I challenge the conventional conception in the literature that associates metaphysical perspicuity with other neighboring notions, i.e., fundamentality and context-independency. Thus, I aim to show that metaphysical perspicuity is a sui generis notion that can be a useful addition to philosophers' toolbox.

Leininger, Lisa

A (MODERATELY HUMEAN) GUIDE TO "HOLDING THE WORLD TOGETHER"

The world is a wonderfully patterned place. This regularity could not have happened by chance. How unlikely that would be! Thus, the regularity of the world calls out for an explanation. Humeans about laws of nature deny that these regularities are enforced by way of necessary connections; as a result, they are charged with failing to explain a feature of the world that needs to be explained. Humeans also face a circularity problem: laws are supposed to explain their instances, but if the laws themselves are explained by the patterns of the instances, then the laws explain themselves. In this paper, I defend a unified Humean solution to both of these problems by way of appeal to distributional properties. I show that distributional properties are appropriately Humean and have advantages beyond solving the two main problems of Humean laws of nature.

Lin, Yi-Cheng

A NEW THEORY OF THE PASSAGE OF TIME

In this paper, I will present a new theory of the passage of time, which I call the disposition-based theory of temporal passage (DTP). The DTP is the view that the world as a whole has a disposition, and the manifestation of this disposition is the passage of time. So, when this disposition is manifested, time passes. Since this disposition is always manifested, time is always passing. There are three reasons to take the DTP seriously. First, it resolves the Frozen World Objection (Fine, 2005) which argues that dynamic theories of time are compatible with a world in which time doesn't genuinely pass. Second, it can explain how and why time passes, which not all dynamic theorists can.

McDonald, Jennifer

WHAT CAUSAL MODELS BRING TO THE TABLE

This paper looks at what causal model analyses of causation are up to. To narrow the focus, I look specifically at analyses of actual causation that take causal models to represent counterfactual dependencies, with counterfactuals underwritten by a similarity semantics. The task becomes that of identifying what causal models bring to the table such that a causal model analysis is an improvement over a traditional counterfactual analysis. I argue that the model approach constitutes less progress than it may seem, while the progress it does make doesn't rely essentially on models. Ultimately, I argue that the real contribution of a model approach lies in its making plain what has been hiding in the shadows of a counterfactual analysis – that the truth conditions for causation-relevant counterfactuals cannot be simultaneously determinate, categorical, and mind-and-language independent. I conclude by suggesting a view of causation which, in my view, best responds to this challenge.

Meacham, Christopher

CONSTRAINT ACCOUNTS OF LAWS

In recent work, Adlam (2022), Chen & Goldstein (2022), and Meacham (forthcoming) have all defended accounts of laws that take laws to be primitive global constraints. A major advantage of these accounts over the standard accounts of laws is that they're able to accommodate the many different kinds of laws that physicists have seriously considered. In this paper I'll present these three accounts, highlight their distinguishing features, and note some key differences that

might lead one to favor one of these accounts over the others. I'll conclude by using the preceding discussion to suggest that one version of these "constraints" accounts is particularly attractive.

Meyer, Ulrich

BEST SYSTEMS IN LAWLESS WORLDS

This paper argues that David Lewis' Best System Account (BSA) finds laws of nature in lawless worlds, where there are no laws of nature to be discovered. This suggests that BSA is at best an incomplete account of lawhood.

Miller, Ryan

LONERGAN'S ODDLY STRONG THEORY OF EMERGENCE

Jessica Wilson (2021) offers three characterizations of strong emergence: (1) heuristically, when higherlevel features cannot in-principle be deduced from lower-level features, (2) the rejection of Physical Causal Closure in the emergence hexalemma, and (3) when a higher-level feature depends on lowerlevel features but has a novel power. I explicate Bernard Lonergan (1992 [1957])'s account of emergence to argue that these three characterizations come apart. Lonergan's account is only weak emergence according to (1), and affirms Physical Causal Closure by denying adjunct premises rather than any of the assumptions of the emergence hexalemma, yet counts as strong emergence according to (3).

Millhouse, Tyler

WHEN LEVELS INTERVENE

It is common to think that higher levels depend on lower levels by way of their dependence on one or more intervening levels (e.g., biological on chemical, chemical on physical). As I will argue, this kind of indirect dependence raises unique and challenging philosophical questions. To answer these questions, I propose a novel account of intervening levels—the structure matching account. This account is based on important results in approximation theory and interprets claims about intervening levels as claims about the implicit structure of longer-range dependence relations. On this account, such claims are true to the extent that they capture real patterns in longer-range dependence relations, and they are assessed according to their value in approximating these relations.

Moorfoot, Will

INDETERMINISTIC GROUNDING AND PHYSICALITY

This paper explores the implications of indeterministic grounding for the distinction between physicalist and anti-physicalist theories of mind. Prima facie, indeterministic grounding is an exclusively anti-physical notion because it violates the deterministic supervenience of groundees on their grounds, suggesting that the groundees are something over and above their grounds. Against this worry, the paper demonstrates how the notion of indeterministic grounding can be coherently employed within a physicalist framework. Say that a grounding relation is physically acceptable when it ensures the transmission of physicality up the grounding hierarchy. Deterministic supervenience is typically assumed to follow from any plausible understanding of physicality transmission. I resist this assumption by setting out a plausible reading of nothing over and above that fails to entail deterministic supervenience but ensures physicality transmission. This reading respects many of our intuitions regarding physicality transmission while also allowing physicality transmission for some instances of indeterministic grounding.

Murgueitio Ramirez, Sebastian

DYNAMICAL DISPOSITIONS AND GEOMETRICAL STRUCTURES

In this essay, I will show that there is an interesting and so far unexplored connection between two recent debates in the metaphysics of science: one that concerns dispositional realism and ontic structural realism and another centered on geometrical and dynamical accounts of spacetime. In bringing these two debates together, I will illustrate that some of the arguments and positions can be both clarified and strengthened. For example, I sketch an improved geometrical approach by importing some tools from ontic structural realism, and I also demonstrate how some of the criticisms developed by dispositionalists against OSR might also apply to the geometrical approach.

Oderberg, David & Bojak, Ingo**BIOLOGICAL MISTAKE THEORY AND THE QUESTION OF FUNCTION**

The making of mistakes by organisms and other living systems is a theoretically and empirically unifying feature of biological investigation. Mistake theory is a rigorous and experimentally productive way of understanding this widespread phenomenon. It does, however, run up against the long-standing 'functions' debate in philosophy of biology. Against the objection that mistakes are just a kind of malfunction, and that without a position on functions there can be no theory of mistakes, we reply that this is to misunderstand the theory. In this paper we set out, informally, the basic concepts of mistake theory and then argue that mistakes are a distinctive phenomenon in their own right, not just a kind of malfunction. The functions debate is, to a large degree, independent of the role of function as it essentially appears in the definition of a biological mistake. Mistake theory does place normative constraints upon which accounts of functions cannot be accepted, but it goes no further. On inspection, though, it appears that the popular 'selected effects' theory of function is incompatible with the theory of mistakes.

Pedersen, Ray**FOR ONE DENDRITIC WORLD**

It is not obvious just what Everettian quantum mechanics (EQM) tells us about reality. In this paper, I closely examine three different metaphysical accounts of EQM: Wallace's Lewisian account, Wilson's quantum modal realism, and Conroy's Everettian actualism. I then devise a taxonomy of dominant metaphysical readings of EQM. From this taxonomy emerges a fourth view that has recently been neglected in the literature: the Hydra view, under which we are committed to many overlapping concrete worlds. I illustrate how each of the three alternatives demand unnecessary additional theoretical machinery. Next, in order to address identity-related issues that were previously damning for the Hydra view, I present a novel mereological account for how to conceptualize parts of the world and the objects in states of superposition that populate it. Thus I offer a vindication of the Hydra view, under which we only must commit ourselves to one dendritic world.

Perry, Zee R.**AGAINST QUANTITATIVE PRIMITIVISM**

In this paper, I'll introduce a novel approach to a problem that is, in the dominant literature, often thought to admit of only a partial solution. I'm going to argue against primitivism about quantitateness. There's a problem, sometimes called the "Problem of Quantity", which is central to the metaphysics of quantity. We should care about this problem, and we should want to solve it. Leaving it unsolved, even partially, is unacceptable. The dominant position in the literature is that the best we can hope for is a partial solution to this problem. We can seek a full solution to the problem, what I call a "fully reductive account of quantitateness", but this has interesting downstream effects on our metaphysics of quantity.

Romagosa, Jerome**DE-CENTERING THE EVERETT INTERPRETATION**

I provide three arguments for why Everettians should reject the centered Everett Interpretation (CEI) as presented by Wilhelm (2022). First, I argue that the CEI appears in tension with a significant motivation for adopting Everettian quantum mechanics: in making the centered Born Rule out to be a fundamental physical law, the CEI appears to reintroduce observers into fundamental physics. The second argument concerns Wilhelm's claim that the centered Born Rule is fundamental. I provide two plausible notions of fundamentality for physical laws, and I argue that the centered Born Rule satisfies neither. My final argument concerns the utility of endorsing the centered Born Rule given concerns about selflocating uncertainty in a branching universe. Since the CEI challenges a commonplace assumption about fundamental physical laws, the tenability of the CEI has implications for both our understanding of probabilities within the Everett interpretation and our broader understanding of physical laws.

Silva, João**ASSESSING HOWARD ROBINSON'S CRITICISM OF HYLOMORPHISM**

Howard Robinson has argued that hylomorphism suffers from two intractable problems: 1) it denies "causal closure of the physical", and 2) because it rests not only on "a kind of downward causation that explicitly rules out such closure", but also on a (teleological) theory of causes

that is irreconcilable with our best contemporary science, it does “not fit nature as we now understand it”. This paper rejects both 1) and 2). Firstly, I will disclose some problems with closure by critically evaluating the causal closure principle as defended by Robinson. In the second part, I will look at recent developments in contemporary biology (specially evo-devo biology) and argue that they reinstate teleological explanations in biology whilst also requiring that teleology to be irreducible. And this, I will argue, rings closer to an hylomorphist picture of nature rather than the one presupposed by Robinson’s causal closure.

Slater, Matthew

NATURAL KINDS IN CRISIS?

In this paper, I consider some salient causes of the (relative) explosion of different theoretical options for philosophical accounts of natural kinds with an eye towards responding to some well-known recent contentions that this increase is a sign of a field in crisis or decline. I argue that the profusion of views stems in part between a tension between several commonly-advocated desiderata for accounts of natural kinds (and more generally of scientific classification). Such a tension, I will suggest, can be resolved in various ways, giving rise to a panoply of options. Seen thus, this panoply is better seen as cause for patience and sustained attention to our theoretical desiderata rather than dismay.

Sullivan, Mack

LAWLESSNESS

This paper argues that there are lawless possible worlds: possible worlds according to which there are no contingent laws of nature. The importance of such a conclusion (for this paper’s purposes) is that it gives rise to a counterexample to a number of influential theories in the metaphysics of science: for example, Woodward’s (2003) account of causation and Strevens’ (2008) account of explanation. §1 of the paper argues that there are such lawless worlds. §2 of the paper argues that there are some lawless worlds which still contain causal and explanatory relations. And §3 argues that such worlds are counterexamples to Woodward’s and Strevens’ accounts.

Tugby, Matthew

FUNCTIONS, GOALS, AND THE PROBLEM OF GOAL FAILURE

The goal-contribution (GC) theory of systemic functions says that X performs function Y for system S if and only if the Y-ing of X makes a causal contribution to a goal of S. There are reasons for preferring the GC theory of functions over the so-called causal role and etiological theories. However, the GC theory faces the problem of explaining goal-directedness in cases where a system fails to achieve its goal. After discussing the shortcomings of the cybernetic version of the GC theory, we propose a new theory of goal-directedness which draws upon contemporary work on realism about dispositions.

Practicalities

Registration

Registration is required for all participants. To register for the conference, please visit the [Registration Page](#) on our website.

Wi-Fi Access

Individual login credentials, valid August 10-12, will be provided at registration (McCain 1132) along with name tags and printed schedules.

Conference Venue

All conference events take place in the **Marion McCain¹ Arts and Social Sciences Building, 6135 University Avenue**. The building encircles a central courtyard. There are ten (not a typo!) staircases between the first and second floors and elevators in the Atrium and near the Department of Philosophy.

Here are some important locations within the building:

Atrium (up the stairs from the Scotiabank Auditorium): Coffee and snacks, and journals exhibit from the University of Chicago Press. Registration desk with nametags, WiFi access codes, and printed event programs.

Department of Philosophy Office, McCain 1132: If no one is at the registration desk in the Atrium, you may check in here.

Scotiabank Auditorium: Large lecture hall for the Keynote Address and Presidential Address.

Rooms 2016, 2021, and 2118: Session locations on the second floor.

Washrooms are located on the second and third floors and the basement.

Conference Map

A map of locations around Halifax is available [here](#).

Catering

Coffee, tea, and some light breakfast food (pastries, fruit, etc.) will be provided in the Atrium each morning at 9:00am. Coffee and tea will be provided at 2:00pm.

Dining

Lunch is not provided, but the following areas have many restaurants within a fifteen-minute walk of the McCain building:

- Coburg St. / Spring Garden Rd.
- Quinpool Rd.

Other parts of the city with good dining options include the following, though they aren't walkable during the lunch break:

- Agricola St.
- Downtown Halifax / Halifax Waterfront

Transportation within Halifax

Halifax is a walkable city for most people. Bus routes 1, 4, and 10 offer service to Dalhousie University. Route 320 offers service between the airport and downtown Halifax. The easiest way to plan a route and access schedules is via google maps. Route schedules are also available [here](#).

Other transportation options include [Casino Taxi](#) and Uber.

Structure of submitted sessions

Sessions are one hour, structured as follows:

Author presentation: 25-30 minutes

Comments: 5-10 minutes

Author response: up to 5 minutes

¹ **Warning!** Dalhousie has two "McCain" buildings. We are in *Marion McCain* on University Avenue, **not** the *Wallace McCain Learning Commons* on Lord Dalhousie Drive.

Q&A: remaining time

Guidelines for session chairs

Your main responsibilities are to (i) adhere to and enforce the schedule, (ii) introduce speakers and commentators, and (iii) manage the queue during Q&A if requested by the speaker. Please prioritize those who have yet to ask questions, etc.

Guidelines for speakers

Audiences appreciate the use of handouts and/or slides. Talks should be no more than 30 minutes. Brevity is a virtue.

Guidelines for commentators

Commentaries should be no more than 10 minutes. Brevity is a virtue. Please bear in mind that your primary role is not to present objections (though of course you may do so), but to stimulate philosophical discussion.

Guidelines for audience

Raise your hand to be added to the queue. When it is your turn, please try to be concise.

Business meeting agenda

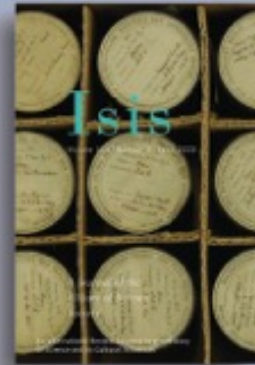
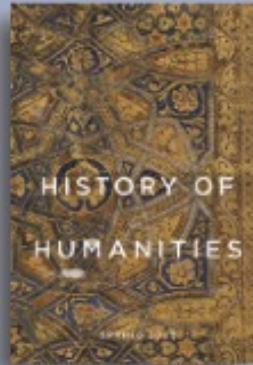
1. Report from Secretary
2. Report from Treasurer
3. Future conference announcements and discussion
4. Membership fees for 2024
5. Elections
 - a. President-elect
 - b. Secretary
 - c. Council Member
6. AOB

Sponsors

The SMS is grateful to the following organizations for their support of this conference.

- The [Canadian Journal of Philosophy](#)
- The [Department of Philosophy at Dalhousie University](#)
- The [University of Chicago Press](#)

Journals from Chicago



**The British Journal for the
Philosophy of Science**

History of Humanities

**HOPOS: The Journal of the
International Society for the History
of Philosophy of Science**

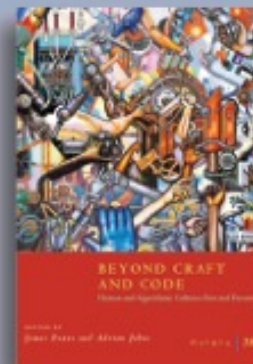
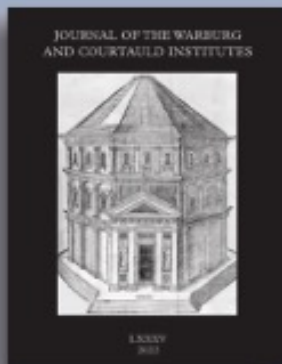
**Isis: A Journal of the History of
Science Society**

**Journal of the Warburg and
Courtauld Institutes**

**KNOW: A Journal on the
Formation of Knowledge**

Osiris 38

*Beyond Craft and Code:
Human and Algorithmic Cultures,
Past and Present*



THE UNIVERSITY OF CHICAGO PRESS JOURNALS

journals.uchicago.edu