

# Research Statement

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I have active research that spans the fields of epistemology, logic, philosophy of science and philosophy of language. Most of my work revolves around the nature of inquiry, while the rest deals with explanation and scientific representation. Earlier work of mine centered on European Philosophy of the 19<sup>th</sup> and 20<sup>th</sup> century. I discuss each area of research below.

## Inquiry

From the search for ones' keys to the hunt for the Higgs-Boson, *inquiry* animates our epistemic lives. Yet, despite its centrality among our epistemic practices, inquiry has not attracted systematic philosophical investigation and the extant literature on inquiry remains inchoate, fragmented and far smaller than its significance would suggest. Much of my work aims to give inquiry the attention it deserves, in particular, by studying the psychological attitudes, speech acts, and reasoning patterns associated with it.

## Erotetic Logic

Whatever else it might be, inquiry is a process of reasoning that involves asking and answering questions. For the most part, philosophers and logicians have thought of reasoning and inference in terms of the principles governing canonical attitudes like belief and speech acts like assertion. In order to understand inference from the perspective of inquiry, we need to consider the role that questions play as both premises and conclusions. While erotetic logicians have made some headway in this direction, they have met with little success when it comes to developing proof theories for these reasoning patterns. This is rather unfortunate given that proof theory is widely thought to be the area in which logical theories make contact with our ordinary reasoning practices. In recognition of this deficient, I have developed the first calculus adequate to all the relations studied by Inferential Erotetic Logic [7, 10].<sup>1</sup> Among other benefits, this calculus captures a uniquely *erotetic* form of defeasibility, namely, the kind of irrationality that characterizes agents who inquire into questions for which they already have the answer. Having a formal model for this type of irrationality is of special significance to the development of intelligent systems capable of informative-seeking behavior. In recent work [10], I show how an automated theorem prover for defeasible erotetic logic can aid the design of inquiring systems, e.g. machine learning algorithms augmented with a kind of artificial curiosity. In addition to these contributions to AI, my calculus for defeasible erotetic inferences also has promising implications for the semantics of interrogatives. Since the calculus assigns introduction and elimination rules to question-forming operators, it might be possible to construct an proof-theoretic or "inferentialist" semantics for

interrogatives. Articulating such an account is among my long-term research goals.

## Norms of Inquiry

It is often assumed that the norms governing proper assertion, legitimate belief, and correct reasoning will all mirror one another. I am interested in how an analogous assumption operates in our understanding of the patterns of thought and speech we associate with inquiry, i.e. interrogative attitudes (e.g. *wonder*, *curiosity*) and the linguistic acts we perform when we ask questions. In recent years, some have suggested that interrogative attitudes are normatively incompatible with beliefs. This idea fits nicely with the notion of erotetic defeat that I have sought to capture in my logic. Nonetheless, in forthcoming work [9], I draw on linguistics and decision theory to suggest that there are other norms for interrogative attitudes that appear to conflict with the supposed incompatibility between inquiring and believing.<sup>2</sup> The upshot is not only that the norms governing inquiry are likely to be far more complicated than previously believed, but also that they might apply to a range of affirmative attitudes, e.g. *suspecting that p* or *guessing that p*.

## Queries

My work on the speech acts associated with inquiry—what I call *queries*—began with my dissertation [15, 16], where I presented a normative-pragmatic account of such acts by drawing on work by Robert Brandom, Rebecca Kukla, and Mark Lance. Given the tremendous amount of ink spilled on assertion and its norms, it is remarkable how little attention has been paid to querying. In a work in progress [11], I present what I take to be the definitive account of queries, according to which they stand in normative relations not only to assertions, but to a whole slew of “alethic speech acts,” such as conjectures, guesses, and guarantees. The central idea is that the kinds of epistemic requirements needed to felicitously perform the latter are also the “goods” that are sought by queries. But in contrast with their orthodox treatment in speech act theory, queries, in my view, are not a subspecies of requests. Instead, they form a distinct class of second-personal addresses in which speakers both call for and *reveal* epistemic commitments.

## Epistemic Value

This work on interrogative attitudes and queries dovetails with debates about epistemic value, where reflections on the supposed goal of inquiry have occupied a central position. Many hold that true beliefs are of fundamental epistemic value, but in recent collaborative work [4], I have argued that this role is better played by *true answers to relevant questions*—a position we dub *inquisitive truth monism* (ITM). There are several advantages secured by this successor to so-called *true-belief monism*. One is that it renders valuable various non-doxastic or quasi-doxastic attitudes that are important to properly conducted inquiry. A second advantage is its ability to explain the epistemic value of falsehoods that occur as part of idealizations in scientific investigation. Simply put, such

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<sup>1</sup>[10] provides a cleaned-up and streamlined reformulation of the sequent calculus presented in [7], with application to work in AI.

<sup>2</sup>[9] is a work in progress that extends arguments introduced in [8].

falsehoods serve as answers to irrelevant questions—irrelevant, that is, to the inquiry of which the idealization is a part. The appeal to “relevant questions” permits the account to make sense of the hierarchical and nested structure of inquiries, formally conceived according to defeasible erotetic inferences, and to make explicit the role played by non-epistemic values, such as agents’ interests and social role-responsibilities, in the construction of epistemic value. To the extent that there is a sphere of value that we can legitimately distinguish as “epistemic,” ITM holds that it is only intelligible against the backdrop of non-epistemic values. Thus far, we have only defended the idea that being a true answer to a relevant question is necessary for being epistemically valuable. In future work, we intend to complete the story by arguing that it is also sufficient. To do so, we will show how ITM accounts for the epistemic value of seemingly trivial or “pointless truths,” and how it accommodates the intuition that knowledge is more epistemically valuable than mere true beliefs.

## Explanation

My work on questions, inquiry, and non-canonical patterns of inference converge in the analysis of scientific explanations and explanatory reasoning. Among the few things that philosophers working in these areas agree on is that explanations provide answers to why-questions and that they describe causal or other modally laden dependency relations. While I share the former commitment, I eschew the latter—even granting the point, I have cast doubt on whether the same relations underwrite all explanations [1]. Indeed, I contend that explanatory vocabulary’s chief function is to express agents’ commitments to certain kinds of “sturdy” defeasible inferences, and it’s this expressive role that provides explanations with the little unity that they have. In a series of co-authored papers [3, 5, 17], I present this “inferentialist-expressivism” for explanatory vocabulary, demonstrating how it, *inter alia*, tackles the problems of explanatory asymmetry and accounts for the propriety of *inference to the best explanation* (IBE). I have even developed the first formal, qualitative treatment of IBE that incorporates an explicit (expressivist) theory of explanatory vocabulary [12]. This advance in the logic of explanatory reasoning dovetails with my computationally-robust proof theory for erotetic inferences insofar as both contribute to the formalization of scientific reasoning and are animated by the (distal) goal of automating scientific activity. Recently, my work has engaged the pragmatics of explanation, in particular, the nature of explanatory obligations [2]. Drawing on my account of queries, I view explanatory responsibilities in terms of an agent’s social-normative position and the way it renders her susceptible to (legitimate) queries involving why-interrogatives. In future papers, I hope to integrate these pragmatic and logical perspectives on explanation.

## Representation

As may be evident from the projects described above, I have a long-running interest in the way non-representational concepts, such as that of “good inference,” might serve as a suitable basis for understanding a variety of phenomena, from questions to explanations. Dating back to my grad-

uate work at University of Pittsburgh, where I was invited to study under the direction of Robert Brandom, this interest is now most active in my work on scientific representation. In collaboration with two philosophers of science, Kareem Khalifa (Middlebury) and Mark Risjord (Emory), I am embarking on a book-length project that aims, like our account of explanation, to provide an inferentialist-expressivist theory of scientific representation. On this account, representational vocabulary in science is used to express endorsement of various inferences from models to their respective targets. We pair this story about scientific representation with the “question-based” theory of epistemic value, described above. Very roughly, the idea is that a representation is successful (accurate, fruitful, etc.) just in case it provides correct answers to the relevant questions. Using tools from the semantics, pragmatics, and logic of questions, we hope to identify and formally regiment the epistemic considerations that determine whether an answer is correct. We are in the early stages of developing this model, and tracing out its implications for discussions concerning rationality, ontological commitment, theory structure, science and values, epistemic injustice, and (once again) explanation.

## 19<sup>th</sup> and 20<sup>th</sup> Century European Philosophy

My earliest published works sprang from interests that brought me to philosophy in the first place, namely, a fascination with the way social theory and epistemology intersect in German philosophy, particularly in the critical theory of the Frankfurt School. In those early papers, I sought to analyze the contributions of thinkers like Theodor Adorno, Georg Simmel, and Wilhelm Dilthey in the idiom of contemporary epistemology [6, 13, 14]. I remain convinced that today’s social epistemology has much to learn from the work of these figures.

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