

Intellectual Courage and Inquisitive Reasons

Will Fleisher

Forthcoming in *Philosophical Studies*

Abstract

Intellectual courage requires acting to promote epistemic goods despite significant risk of harm. Courage is distinguished from recklessness and cowardice because the expected epistemic benefit of a courageous action outweighs (in some sense) the threatened harm. Sometimes, however, inquirers pursue theories that are not best supported by their current evidence. For these inquirers, the expected epistemic benefit of their actions cannot be explained by appeal to their evidence alone. The probability of pursuing the true theory cannot contribute enough to the expected epistemic benefit for the action to count as courageous rather than reckless. Thus, there must be some other epistemic consideration which favors their action, besides evidence for their theory.

I argue that the proper account of intellectual courage requires recognition of inquisitive reasons: a distinct category of epistemic reasons which concern successful inquiry. This category includes reasons to think a theory itself is promising, e.g., that the theory suggests potentially fruitful new research. It also includes social epistemic reasons, e.g., that pursuing a theory will improve the distribution of cognitive labor. Inquisitive reasons help explain why researchers who pursue improbable theories count as intellectually courageous, rather than reckless. The expected epistemic benefit of an action is partially determined by the inquisitive reasons in its favor. On my account, intellectually courageous inquiry requires acting in a way that is sensitive to inquisitive reasons.

1 A Familiar Case of Intellectual Courage

Nobel laureate Barry Marshall famously drank broth infected with bacteria to demonstrate that it causes stomach infections and ulcers (Marshall, Armstrong, McGeachie, & Glancy 1985). This was a courageous act in the service of inquiry. Marshall acted in pursuit of successful medical research, despite risking (and in this case, suffering) serious harm. Even before this dramatic episode, Marshall and his Nobel-sharing collaborator Robert Warren were already engaged in courageous inquiry. When they began their research on peptic ulcer disease, the consensus in the field was that ulcers were primarily caused by an excess of stomach acid, often due to stress. Marshall and Warren

instead endorsed a bacterial explanation which had largely been abandoned in the 1950s. When they began pursuing this theory, they had promising results, but the overall evidence was not in favor of the bacterial hypothesis. Meanwhile, reams of research had been produced supporting the excess acid theory. Thus, there was strong reason to doubt the bacterial theory.¹

Marshall and Warren eventually won the greatest accolade in science for their discoveries. However, the success of the bacterial model was not a foregone conclusion given their epistemic circumstances at the beginning of their research. The evidence available at the time supported the rival view. Moreover, scientists in the field were heavily invested in the excessive acid theory. Not only had they developed careers on its basis, there was a lucrative market in developing acid-blocking drugs and other acid-based treatments (M. Kidd & Modlin 1998). Between the evidence disfavoring the bacterial theory, the attitudes of other researchers, and the market incentives, Marshall and Warren faced significant risk to their careers and reputations in endorsing and pursuing the theory. They faced this risk in the pursuit of intellectually valuable ends. Thus, their research was intellectually courageous.

Despite the fact that Marshall and Warren were clearly intellectually courageous, the way they pursued epistemic goals does not fit with the usual understanding of epistemic reasons and normativity. They cannot be described as simply following the evidence where it led them. Initially, their evidence did not favor the theory they endorsed.² They were pursuing intellectually laudable goals, but they did not do so by simply being sensitive to evidence concerning the bacterial theory.

The problem that this case illustrates is that intellectually courageous scientists do not always pursue the most likely theory, or the theory with the most evidential support. Sometimes they even pursue theories that are likely to be false based on their current evidence. Intellectual courage involves risking serious harm in the pursuit of epistemic goods (Baehr 2011). And virtuous intellectually courageous acts must be epistemically appropriate or permissible. However, epistemic normativity is typically thought to require following your evidence, i.e., believing propositions supported by your total evidence. This raises the question: how can scientists be pursuing epistemic goods (in an epistemically permissible manner) if they are not pursuing the theory best supported by their evidence?

To adequately account for cases like Marshall and Warren's, we must rec-

¹My choice of this case was inspired by Zollman (2010). Zollman's discussion has prompted focus on this case in philosophy of science. See, e.g., (Radomski, Šešelja, & Kim 2021; Šešelja & Straßer 2014b).

²Note that this claim is compatible with thinking that Marshall and Warren's evidence favored the bacterial theory to a greater degree than other inquirers' evidence did—either because Marshall and Warren had different evidence, or because they had differing background commitments. The claim is compatible with allowing for interpersonal differences in evidential evaluation (as suggested by feminist philosophers such as Longino (1990), Solomon (1996), and Harding (1991)). Even if Marshall and Warren had stronger than typical evidential support, this is not adequate to explain how pursuing the bacterial theory was rationally permissible, given the scientific consensus against it and preponderance of evidence favoring the dominant theory.

ognize epistemic reasons that favor pursuing a theory, but not because they serve as evidence for the theory. I propose that we call these extra-evidential epistemic considerations *inquisitive reasons*.³ Inquisitive reasons concern the promotion of successful inquiry. These reasons include considerations about the intrinsic promise of a theory. They also include considerations of the social structure of inquiry. I will suggest that recognition of this additional category of epistemic reason allows a proper evaluation of cases like Marshall and Warren's. It also provides a missing piece for the traditional account of intellectual courage. Specifically, it helps us understand how subjects may aim at epistemic goods (in an epistemically permissible way), despite pursuing a theory that is not supported by their total evidence. Providing this missing piece allows us to distinguish intellectual courage from its associated vices of recklessness and cowardice.

I have two main goals in this paper. The first is to supplement accounts of intellectual courage by appealing to inquisitive reasons. The second goal is to argue for the importance of inquisitive reasons on the basis of their role in providing this supplement to accounts of courage.

In what follows, I will explain the picture of intellectual courage I am working with, and then suggest that our understanding of intellectual courage is missing an important piece. In section 3, I will give an account of inquisitive reasons. In section 4, I will argue that an account of intellectual courage which incorporates sensitivity to inquisitive reasons provides the right evaluative verdicts in cases like Marshall and Warren's. In section 5, I will defend the claim that inquisitive reasons are epistemic reasons.

2 Intellectual Courage

Courage generally involves willingness to act to promote some good(s) despite an apparent threat of harm. A health worker acts courageously when she continues to care for patients' health during a pandemic, despite risk of infection. What makes an act *intellectually* courageous is for the goods in question to be intellectual, i.e., epistemic goods. A journalist in an authoritarian state acts with intellectual courage when she discovers illegal or immoral activity by a government official and reports on it, in order to promote the dissemination of truth, despite the threat of harm.

As a starting point, I will appeal to an insightful and influential account of intellectual courage provided by Jason Baehr (2011). The account of inquisitive reasons I will offer below is meant to provide a supplement to theories like Baehr's so that they give a better account of intellectual courage during inquiry. However, inquisitive reasons are also compatible with other accounts of the virtue (e.g., R. C. Roberts and Wood 2007).

³In this paper, I will use the normative language of reasons. However, this does not require commitment to the idea that reasons are normatively fundamental. We could also easily talk in terms of inquisitive values, norms, or oughts.

Baehr's account of the virtue of intellectual courage involves first having a certain character trait (2011, p. 177):

Intellectual Courage (IC) A disposition to persist in or with a state or course of action aimed at an epistemically good end despite the fact that doing so involves an apparent threat to one's own well-being.⁴

Baehr suggests that this character trait is necessary but insufficient for an agent to have the *virtue* of intellectual courage. Baehr thinks the virtue also requires that the agent have a proper epistemic motivation: they must care enough—compared to their other motivations—about achieving epistemic goods (2011, p. 177). This motivational requirement ensures virtuous agents meet a weaker condition: that they aim at epistemically good ends *in an epistemically appropriate manner*. I think this weaker requirement is the crucial one for distinguishing the virtue from the character trait, and for distinguishing the virtue from its associated vices. One might appeal to this weaker requirement alone without affecting the arguments offered below.

There are two main aspects of IC, corresponding to two important requirements for an act to be intellectually courageous. Baehr calls these the context and the substance of the virtue.⁵ The context of the virtue is the circumstances where it is expected to operate. For courage, the relevant contexts are those where the subject is faced with an apparent threat. If there is no such risk, there is no opportunity to display courage. Note that intellectual courage is taken to be just like other kinds of courage with respect to context. It is not a feature or requirement of intellectual courage that the threat be epistemic in nature. Marshall and Warren risked their reputation. The journalist might risk her life.⁶

The substance of a virtue concerns what sorts of actions are required by the virtue in its contexts. Some virtues have relatively specific substances. Honesty, for instance, concerns certain communicative acts. The substance of courage is less specific. It requires acting (or persisting) in a way that promotes some good, but these acts can be of just about any variety. For *intellectual* courage, the substance requires that the action be aimed at an intellectual good. So, what distinguishes intellectual courage from ordinary courage is its substance. Intellectual (or epistemic goods) are typically thought to include things like truth, knowledge, and understanding. A courageous journalist acts to discover and disseminate true answers to important questions, despite an apparent threat of harm.

Given the above account, in order to determine whether an act is intellectually courageous one must first determine whether it is in the relevant context of

⁴Baehr's account is part of the responsibilist tradition in virtue epistemology which began with Code (1987), Zagzebski (1996) and Montmarquet (1992). R. C. Roberts and Wood (2007), Battaly (2017), and I. J. Kidd (2019) also appeal to Baehr's analysis. For overviews of virtue epistemology, see Axtell (1997); Battaly (2008).

⁵This is similar to the account given in Swanton (2001).

⁶Though one may also be courageous in the face of epistemic harms, e.g., epistemic injustice (Fricker 2007).

apparent threat. Then, one must ask whether the act aims at, and successfully promotes, intellectual ends. However, this is not quite the full story. One must also compare features of the substance with features of the context. Are the potential benefits of so acting good enough to justify the risk? The courageous agent must competently determine whether an act's potential for promoting epistemic goods is great enough to counterbalance the potential badness of the apparent threat. That is, the agent must be competent at recognizing (at least implicitly) when the expected benefit of the act adequately outweighs the expected harm that is threatened. Courage involves facing very significant risks, so the requirement here isn't that the expected benefits must be so good that taking on the risk is a "good bet" from a purely practical, self-interested perspective. The requirement is significantly weaker than this. A courageous act requires that something genuinely and significantly good would be promoted, to an extent that makes pursuing these goods despite the risk courageous rather than reckless.

There is a long tradition of distinguishing virtues by appeal to their associated vices.⁷ One thing that distinguishes the virtue of intellectual courage from its vices is competent comparison of risked harms and expected benefits. The vices associated with courage are cowardice and recklessness. I focus on recklessness because of its relation to the Marshall and Warren case. Recklessness involves acting when there is inadequate potential benefit to counterbalance the serious threat. It is reckless to drink tea on the railroad tracks in front of an oncoming train, because the potential benefit of drinking tea (right then and right there) is too little to justify the threat of death. Similarly, intellectual recklessness involves acts with too little expected epistemic benefit to counterbalance their expected harm. It would be reckless to risk death in order to discover the answer to a trivia question. The benefits of knowing trivia are too meager to justify such danger.

Again, what distinguishes intellectual courage from the ordinary courage is that the expected benefits in question are epistemic. So, determining whether the action promises adequate benefit requires sensitivity to epistemic reasons. Thus, the substance of intellectual courage concerns what kinds of epistemic reasons a subject must be sensitive to in choosing their actions. Avoiding intellectual recklessness and cowardice requires appropriate competence at evaluating such reasons.

There is an important piece missing from current accounts of the substance of intellectual courage. What is missing is an account of the relevant epistemic reasons guiding an intellectually courageous agent. This missing piece is required for understanding courageous acts of inquiry, and distinguishing them from reckless and cowardly acts. This is particularly relevant to understanding acts which are not acts of belief formation, e.g. acts of inquiry into a particular question or theory.⁸

⁷For the general strategy, see Aristotle (2014), Hursthouse and Pettigrove (2018), and Hursthouse (1999). For courage in particular, see Scarre (2010). For intellectual courage, see especially R. C. Roberts and Wood (2007), I. J. Kidd (2019) and Baehr (2011).

⁸Recognizing that extant theories of intellectual courage are missing this piece does suggest that

Since intellectual courage involves epistemic ends, it may seem obvious that a subject ought be sensitive only to her evidence for a theory when evaluating the potential benefits of pursuing that theory. Competent evaluation of epistemic ends requires paying attention only to epistemic reasons. And one might think that all epistemic reasons are evidence.⁹ This fits the case of a courageous journalist: she forms beliefs based on her evidence, and reports on these beliefs, despite threat of harm. However, forming beliefs and giving testimony are not the only kinds of intellectually courageous acts one can perform. Agents may also engage in, or persist with, acts of inquiry. A journalist who continues an investigation despite limited evidence, or a scientist who pursues an unlikely theory, are engaged in acts of inquiry. These acts also aim at epistemic ends, however, they do so indirectly. Investigations which gather evidence help place a subject in a position to form true beliefs. Investigations are not (or are not merely) acts of belief-formation, however. Partially because of this, acts of inquiry plausibly must be sensitive to epistemic reasons besides the evidence for the particular proposition at issue.

Marshall and Warren's case illustrates intellectually courageous inquiry. Moreover, it illustrates the idea that intellectually courageous inquirers must be sensitive to considerations other than evidence concerning the theory in question. Recall that at the beginning of their inquiry, the evidence did not favor the bacterial theory over the stress-based theory. Thus, we can't describe Marshall and Warren as merely following their evidence regarding peptic ulcer disease. The evidence disfavored their theory. This seems true even if they had access to evidence their peers did not. It also seems true even if they had differing background commitments (or priors) concerning the degree of support provided by the available evidence. Scientific consensus against a view offers very strong evidence disfavoring it.

Despite the evidence and social circumstances providing strong reasons disfavoring the bacterial model, Marshall and Warren's pursuit of that theory promoted epistemic goals in an epistemically appropriate manner. The expected benefits of their inquiry intuitively justified them in taking the risks they did. What reasons were guiding their attempts to achieve intellectual goods? What considerations supported the idea that the relevant expected benefits were present?

they need to be amended. This is particularly clear for those theories meant to provide sufficient conditions for being intellectually courageous. However, this does not show that we must scrap these theories and start from scratch. They simply need to be modified by including the account of inquisitive reasons I will present here. This is straightforward for Baehr's (2011) theory and I expect it will be similarly straightforward for many other accounts.

⁹The latter claim in particular expresses the position known as *evidentialism* about the ethics of belief (which is closely related to but distinct from evidentialism about epistemic justification). For support of this view, see Shah (2003); Shah and Velleman (2005), Clifford (1947), and Conee and Feldman (2004). Goldberg calls such a position "extreme Cliffordianism" (2017), and provides helpful additional arguments against it.

3 Inquisitive Reasons

The missing piece required to understand intellectually courageous actions like Marshall and Warren's is a distinct type of epistemic reason. I call these *inquisitive reasons*.

3.1 Characterizing Inquisitive Reasons

As I will understand things, a reason R is a proposition which stands in a favoring relation to an act ϕ (or a state S).¹⁰ Here, I am concerned with normative reasons: reasons that justify an agent's actions (or states), or that make it the case that an agent ought to so act. Normative reasons may come apart from motivating reasons, which are the reasons for which an agent actually does something.¹¹ That drinking a glass of water will slake my thirst is a normative reason for me to drink the water. The fact favors my act of drinking, given my goals. This is a practical reason. Meanwhile, that my returning a library book will keep my promise to do so is a reason for me to return the book. The fact about the promise favors the act of returning the book because it will satisfy a moral requirement, or promote a moral good. This is a moral reason. In addition to such practical and moral reasons, there are epistemic reasons: propositions which favor an act because the act will promote some epistemic end.

Evidence is the most familiar kind of epistemic reason. A proposition E is evidence for another proposition P when E supports the belief that P is true. E is then an epistemic reason which favors the believing (or coming to believe) that P . This is because of the special relationship belief is taken to have with truth: the correctness condition on believing is the truth of the believed proposition. E then bears an evidential support relation to P . This support relation is the particular favoring relation between evidence and what it is evidence for. A popular account of the evidential support relation is that the truth of E makes the truth of P more probable (Kelly 2008, 2016).

I will argue that inquisitive reasons are also epistemic reasons. I will first offer an account of inquisitive reasons that treats them as a type of epistemic reason. This will help illustrate the explanatory usefulness of treating inquisitive reasons as epistemic. Section 5 provides further defense of this idea, and a discussion of the relation between inquisitive reasons and other kinds of non-evidential epistemic normativity.

An inquisitive reason favors an act (or state) because it will promote successful inquiry. Inquisitive reasons are considerations that are relevant to the success of inquiry, but which are not necessarily evidence for any proposition

¹⁰There is dispute about whether reasons are facts, propositions, psychological states, or some other kind of entity (Alvarez 2017). Inquisitive reasons are compatible with any of these options, so we can sidestep this dispute. I will generally talk in terms of propositions as this is typically how the evidential support relation is discussed Kelly (2016).

¹¹For an overview about the normative/motivation distinction see (Alvarez 2017) and Star (2018).

which answers the question the inquiry is directed at. The content of an inquisitive reason either directly concerns how the act (or state) will improve the prospects of inquiry, or is indirectly related to how the act (or state) will improve inquiry.

For ease of discussion, in the remainder of the paper I will talk in terms of reasons for acts, except where the distinction between acts and states is important.

Here is an initial characterization of inquisitive reasons (for action):

IR R is an **inquisitive reason** to perform an act ϕ iff R favors ϕ -ing in virtue of the fact that ϕ -ing is likely to promote successful inquiry (and to promote it in the right kind of way).¹²

This characterization calls for several points of clarification. The phrase “successful inquiry” is neutral between a variety of different accounts of success.¹³ Similarly, the term “promote” is neutral between several ways an act might relate to successful inquiry, but can be naturally understood as raising the probability of success. Importantly, an inquisitive reason may promote success for either an individual’s inquiry, or for collective inquiry. So, an agent may have an inquisitive reason to act because doing so will promote collective inquiry, despite the act having no real chance of securing knowledge or understanding for the agent themselves, e.g., because the agent won’t live long enough to see the inquiry come to fruition. The parenthetical requirement to promote successful inquiry *in the right kind of way* is meant to exclude certain “wrong-kind” reasons for the action—specifically, it is meant to exclude promoting inquiry in ways that violate the internal standards of inquiry. Precisely what this means, and the motivation for including it, is the topic of section 5.2.

IR is compatible with the three main accounts of the favoring relation: (1) that favoring is a primitive normative notion (Parfit 1984; Scanlon 1998); (2) that favoring involves explaining why one ought perform an action (Broome 2018; Brunero 2018; Schroeder 2007); or (3) the *Reasons as Evidence* (RaE) view, which claims that all favoring is reducible to evidential support, i.e., R is a reason to ϕ iff R is evidence that *one ought to ϕ* (Kearns & Star 2009). RaE might appear to be in conflict with the claim that inquisitive reasons are distinct from evidence, as it makes inquisitive reasons a type of evidence. However, careful consideration of what act ϕ is at issue in each case will help dispel this appearance. I will return to this point in section 4.2.

Inquisitive reasons are distinct from evidence in the way they favor a particular action. A piece of evidence E favors forming a belief in proposition P because the truth of E raises the probability of the truth of P , and beliefs aim at truth. However, an inquisitive reason R favors an action ϕ because performing

¹²This characterization is again in terms of acts for ease of discussion, but can easily be adapted for inquisitive reasons to be in a state.

¹³Candidates include that successful inquiry involves knowledge Williamson (2000), true belief Goldman (1986); Pettigrew (2016), or true answers to interesting questions Khalifa and Millson (2020).

ϕ promotes successful inquiry.¹⁴ This success, and ϕ itself, may not involve belief in any proposition that R is evidence for. Here, I will focus on reasons to *pursue a theory*, where pursuit consists in an act (or acts) of scientific inquiry into whether the theory is true. There are many inquisitive reasons to pursue a theory that do not count as evidence for that theory. A proposition may serve as a strong inquisitive reason for pursuing a theory, while the same proposition may offer only weak evidential support for the theory itself. This disparity in strength of favoring and strength of evidential support—between the very same proposition and theory—shows that inquisitive reasons favor theories in a different way than evidence does.

We can illustrate the distinction between evidence for a theory and inquisitive reasons for a theory by appeal to Marshall and Warren's case. When Marshall and Warren began work on the bacterial theory (B), no other researchers were working on it. Let F represent the claim that *few researchers are pursuing B*. Let ϕ be the act of pursuing B . For Marshall and Warren, F provided an inquisitive reason for ϕ . If few people are working on the theory, then their own work would potentially provide a larger contribution if it were successful. But F did not provide *evidence* for B . Indeed, it provided evidence for $\neg B$: if few researchers are pursuing a theory, this suggests the theory is unlikely to be true. Thus, the very same proposition provides a strong inquisitive reason favoring the pursuit of a theory, but provides weak evidence against the theory. Notice that a proposition that is an inquisitive reason for pursuing a particular theory will also be evidence for various other propositions. In Marshall and Warren's case, F provided evidence for the claim that *pursuing B will promote successful inquiry*, and the claim that *Marshall and Warren ought to pursue B*. But F is not evidence for B .

There are inquisitive reasons for acts of inquiry besides pursuit. For instance, an agent can have a reason to found a journal because doing so will promote successful inquiry. In general, we can distinguish inquisitive reasons from evidence by appeal to the question (Q) being inquired into. Where ϕ is an act of inquiry into Q , an inquisitive reason is a reason to ϕ that is not evidence for any answer to Q .¹⁵

There are at least two paradigm types of inquisitive reasons. The first concern intrinsic features of a theory that make it pursuitworthy or *promising*. The second concern features of the social circumstances in which a research activity is undertaken.

3.2 Promise Reasons

Following Laudan (1978), philosophers of science have distinguished between *pursuit* of a theory and *acceptance* of a theory. Accepting a theory requires

¹⁴This makes makes an inquisitive reason a kind of teleological reason: a reason to act because doing so will promote some value or end (Portmore 2018).

¹⁵For discussion of question-directed inquiry, see Habgood-Coote (2022); C. Roberts (2012). Thanks to two anonymous reviewers at this journal for helpful discussion on the distinction between inquisitive reasons and evidence.

thinking that the theory is the best one to explain the evidence. To accept a theory is to treat it as true, or at least as the best available.¹⁶ Meanwhile, to pursue a theory is to work on it. Pursuit might involve running experiments, improving the theory, determining what follows from it when conjoined with different auxiliary assumptions, and many other research activities.

An important motivation behind the pursuit/acceptance distinction is that one can have good reason to pursue a theory even though one does not have adequate evidence to accept it. This situation is common whenever a radically new theory is proposed. A new theory typically has less evidential support than an established theory, as there will have been less time to test and develop it. Nonetheless, it is still a good thing for inquiry that researchers work on, develop, and test new theories. Thus, a theory's being supported by the weight of evidence cannot be a requirement for rational pursuit.

Laudan and others in the pursuit literature looked to features of the theory itself to explain the rationality of pursuing a theory. These considerations go by various names, e.g., considerations of promise, fertility, fruitfulness, or pursuitworthiness.¹⁷ I will refer to these intrinsic features of a theory which justify its pursuit as promise reasons:

PR *R* is a **promise reason** to pursue *T* iff *R* is an inquisitive reason to pursue *T* that concerns a feature of *T* itself.

Promise reasons are about the theory itself.¹⁸ This is as opposed to the social inquisitive reasons to be discussed shortly, which may also be reasons to pursue a theory, but instead concern features of the surrounding social context. In other words, what distinguishes the categories is the content of the reasons, rather than differences in what acts they favor.

To see why it is plausible that these promise reasons are distinct from evidence, consider the example of testability. Testability is an important feature for a theory to have. It is not easy to create a testable theory, nor is it always easy to ascertain whether a theory is testable. So, finding out that a theory is indeed testable is a significant reason in favor of working on that theory.¹⁹ However, the significance of such reasons cannot be explained by appeal to

¹⁶There are some important debates about the nature of this kind of acceptance. See, for instance, (Lacey 2015; Levi 1980; Maher 1993; Van Fraassen 1980). Some philosophers, like Maher and Levi, take acceptance and (categorical) belief to be identical. Others, like Cohen (1989) and Stalnaker (1984), take the two attitudes to be distinct. The differences in these positions won't matter for our purposes here.

¹⁷There is a significant literature on promise or pursuitworthiness and the context of pursuit. For an overview of this literature, see Šešelja and Straßer (2013, 2014a), Laudan (1978), Whitt (1992), Barseghyan and Shaw (2017).

¹⁸Philosophers of science dispute whether a theory is the right unit of appraisal, or whether we should instead talk about paradigms (Kuhn 1970), research traditions (Lakatos 1978), research programs (Laudan 1978), or some other unit of appraisal. I wish to remain neutral on this dispute, so I will talk in terms of "theories", but understand this to mean whatever is the right account of what scientists remain committed to over time despite revisions.

¹⁹For helpful discussions of testability, see Staley (1996, 2004), Millstein (2007), and Sober (2008). For the idea of testability as a non-evidential epistemic value, see Steel (2010).

the evidence that testability affords a theory. Most testable theories are false. While undergoing and passing a test would provide significant evidence for a theory, that a theory is merely testable is relatively weak evidence. But testability is a strong reason to pursue a theory. After all, it is a benefit to inquiry to learn the results of the test even if the test *disconfirms* the theory tested. Hence, testability is an inquisitive reason. The primary way it favors a theory is not in virtue of raising the probability of the theory's truth, but instead in virtue of how testing would promote successful inquiry.

Other examples of promise reasons concern a theory's associated conceptual or methodological resources, known as an associated *heuristic* (Lakatos 1978; Whitt 1992).²⁰ A theory's heuristic might include an analogy or a model. For instance, Daltonian atomism appealed to a model of atoms as individual pieces of shot, with substances being composed of those atoms piled together. This model helped suggest new kinds of experiments to run on chemical substances. These experiments involved weighing carefully measured quantities of compounds to show that they scaled in multiples of the atomic weight of the elements in question (Whitt 1992). The heuristic resources of the theory, in virtue of offering this analogy, provide reason to think the theory is promising. The value of the heuristic is an inquisitive reason in the theory's favor. Yet it is at best very weak evidence in favor of a theory that it has an associated analogy. It is easy to construct a theory based on an analogy, and more than one theory can be fitted to the same one. So, many more false theories will have such models than true ones. Moreover, one of the chief benefits of an analogy is that it suggests new lines of research and experiment. Engaging in this research will likely promote successful inquiry even if its results disconfirm the theory in question. Thus, the strength of reason provided by an associated heuristic analogy cannot be fully explained by any evidential support it provides.

3.3 Social Inquisitive Reasons

The second main type of inquisitive reasons concern the social features of inquiry:

SIR R is a **social inquisitive reason** to ϕ iff R is an inquisitive reason to ϕ that concerns features of the social context of the inquiry ϕ -ing takes part in.

Much like promise reasons, social inquisitive reasons may favor pursuing a theory despite not being evidence for that theory. In fact, many social inquisitive reasons provide evidence *against* the theories they favor pursuing. Moreover, social inquisitive reasons need not directly concern forming an attitude toward, or pursuing, any particular propositions or theory.

One example of a social inquisitive reason concerns the distribution of cognitive labor.²¹ As previously noted, this type of inquisitive reason can be found

²⁰For helpful overviews of the nature and value of a theory's associated heuristic, see McMullin (1976); Šešelja and Straßer (2014a); Whitt (1992).

²¹This discussion is inspired by Kitcher (1990), Strevens (2003), Zollman (2009, 2010).

in the example of Marshall and Warren. Around 1980, when they began their inquiry, there was much more evidence favoring the stress theory of peptic ulcers. However, there was still some good evidence available in favor of the bacterial theory. For the sake of easy illustration, we can imagine that a rational credence to assign the bacterial theory was about $Pr(B) = .15$, while a rational credence in the acid theory would be $Pr(S) = .8$. However, the distribution of cognitive labor in the field studying peptic ulcer disease was much more skewed: all of the researchers were pursuing the acid theory, and none were working on the bacterial theory. It is pretty clear that this distribution is suboptimal: a theory with significant chance of being correct was being neglected entirely. In the parlance of computer science, researchers were engaged in too much exploitation and inadequate exploration of new options (Aronowitz 2021).

That Marshall and Warren's pursuit of the bacterial theory would improve the distribution of labor in the field was an inquisitive reason in favor of pursuing that theory. Notice, however, that the fact that no one was working on the bacterial theory is not evidence in its favor. If anything, it is evidence against the theory. If no relevant experts in a field endorse a theory, this is evidence against it. This evidence is outweighed in decisions regarding what to pursue, however, because the inquisitive reason provided by the theory's neglect is quite strong. Improving the distribution of labor in a field can provide a great deal of expected benefit for the field as a whole. This is both because the field will do much better if the theory is true, and because it will promote certain kinds of beneficial disagreement.²² From the perspective of promoting successful collective inquiry, this is an important consideration. Thus, it is a strong inquisitive reason, despite it being evidence against the theory.

Another example, due to Helen Longino (1990), suggests that providing venues for democratic appraisal is a necessary requirement for objective, rational scientific inquiry. Such venues include conferences and peer-reviewed journals. Thus, one has good inquisitive reasons to create journals, or to work as an editor or referee. This is true even if all one cares about is truth, or knowledge. But these reasons need not constitute evidence for any theory (or for any potential answer to a question guiding inquiry). Additional examples can be drawn from the literature in feminist epistemology and in philosophy of race concerning epistemic injustice (Dotson 2011; Fricker 2007) and pernicious ignorance (Mills 2007). That some act would promote epistemic justice, or would disrupt the systems that reproduce white ignorance, are inquisitive reasons in its favor. A particularly relevant example is Medina's discussion of intellectual courage in resisting oppression (2013).

These are just a small selection of examples of inquisitive reasons. There are a variety of other inquisitive reasons of both promise and social inquisitive

²²For support for the claim about beneficial disagreement, see Solomon (1994), De Cruz and De Smedt (2013), Fleisher (2021) and Mercier and Sperber (2011). Barnett (2019) raises a related point about the benefits of obtaining different individuals' opinions for the purposes of judgment aggregation or achieving a "wisdom of the crowds" effect.

sub-types.²³ My goal in this section was to use these examples to motivate the idea of non-evidential epistemic reasons that govern rational inquiry. I think that each example canvassed here is an epistemic reason. An intellectually virtuous agent will be sensitive to reasons of this kind. Even if one cared about nothing but intellectual concerns, one should still pay attention to these reasons. This provides strong intuitive motivation for thinking they are epistemic reasons, distinct from practical reasons concerning fame or fortune. In section 5, I provide further defense of this claim.

4 Inquisitive Reasons and Intellectual Courage

In section 2, I identified a missing piece from our understanding of intellectual courage: an account of the reasons which determine the expected epistemic benefit of an action. We need such reasons so the expected benefit of an act can be compared to the apparent risk of so acting. In this section, I will argue that inquisitive reasons can provide this missing piece, and that they are necessary for doing so.

4.1 Inquisitive Reasons as the Missing Piece

The expected benefits of an intellectual act are partially determined by the inquisitive reasons in favor of that act. This expectation is determined by the balance of evidence and inquisitive reasons. This explains how we can distinguish acts of intellectual courage from acts that are reckless or cowardly. The inquisitive reasons that favor a courageous act outweigh the potential harms threatened in the relevant context. An intellectually courageous person will pursue a theory, despite risking harm, just when the balance of evidence and inquisitive reasons is strong enough. Being strong enough means the expected epistemic benefit of the action is sufficient to make it worth risking the expected harm. A reckless act of inquiry, in contrast, is one with inadequate expected benefit, in virtue of having inadequate support from the combined weight of evidence and inquisitive reasons.

It is commonly accepted that agents may evaluate multiple reasons together to determine what action they favor, all-things-considered. This is why it makes sense to distinguish a *pro tanto* reason from all-things-considered reason (Alvarez 2017). Discussion of this topic typically appeals to a metaphor derived from the scales of justice: weighing the various reasons for and against an action together on a scale, to see whether they favor the action on balance (Broome 2013, p. 52). I want to remain neutral between different accounts of

²³Note that I take the categories of promise and social inquisitive reasons to be generally mutually exclusive. However, there are borderline cases of reasons involving both intrinsic features of a theory and social features. Note, also, that some epistemological theories—e.g., Longino’s account of objectivity (1990), or Solomon’s social empiricism (1994)—include an important social component for all epistemic reasons. However, this is compatible with distinguishing promise and social inquisitive reasons. The former will be features of a theory that are partially grounded in social context, while the latter are features of social context that are not also features of the theory itself.

precisely what this means, and different accounts of how we should evaluate the strength of favoring provided by a set of reasons. All my account requires is that it is possible to evaluate reasons together in this way, so as to determine an expected benefit of an act based on the agent's reasons. However, I am attracted to a view on which we can weigh evidence and inquisitive reasons together using an expected utility calculation. This would make straightforward sense of the idea of expected epistemic benefit. On such a view, the evidential reasons are represented by a probability function, and the inquisitive reasons are represented by a special utility function. Then the balance of inquisitive and evidential reasons is represented by the expected utility.²⁴

The completed account of intellectual courage helps make sense of the intuition that Marshall and Warren were courageous when they first endorsed and pursued the bacterial theory. A discussion of their case also illustrates how the account works. While the bacterial theory initially lacked evidential support, Marshall and Warren had good inquisitive reasons to pursue the bacterial theory. These reasons included both pursuit and social inquisitive reasons. These reasons also help explain why it was courageous, and not merely reckless, for Marshall and Warren to risk their reputations, careers, and health in order to pursue the theory. I will discuss a few of the relevant inquisitive reasons Marshall and Warren possessed.

As noted, scientific consensus in 1980 was that peptic ulcer disease was caused by abnormally high acid levels, brought on by things like stress. However, this consensus was premature: the evidence at the time did not conclusively rule out that bacterial theory (Radomski et al. 2021; Šešelja & Straßer 2014b). In fact, the evidence which had convinced scientists to abandon the theory was based on reasonable but false auxiliary hypotheses. The most important evidence against the bacterial theory was a landmark and hugely influential study by Palmer that purported to show that no bacteria can survive in the human stomach (Fukuda, Shimoyama, & Marshall 2002; M. Kidd & Modlin 1998; Palmer 1954). However, Palmer did not use all the available staining methods for detecting bacteria, assuming the wide breadth of methods he used were representative. In particular, the kind of silver staining necessary to detect *h. pylori* was neglected (Šešelja & Straßer 2014b).

So, the bacterial theory had been inappropriately ruled out. There was still some chance it was true (and indeed, we know it was). This gave Marshall and Warren an excellent inquisitive reason to pursue the bacterial theory: removing a premature consensus in the field. Note that the fact that there was a consensus against the theory was not itself a evidence for the bacterial theory. That there is a consensus against a theory is a very good reason to think it is false, even if it has not been conclusively ruled out. That there was a consensus against the bacterial theory was instead an inquisitive reason to pursue it.

A distinct but closely related inquisitive reason Marshall and Warren possessed concerned the division of cognitive labor in the field at the time. Due

²⁴For more about this kind of view, see Fleisher (2018); Levi (1974); Maher (1993). For additional discussion of other views about weighing or adding together the force of reasons, see Nair (2021).

to the consensus endorsement of the acid theory, essentially no one was working on the bacterial theory prior to Marshall and Warren's research. Indeed, Marshall apparently had some difficulty in persuading anyone to oversee his fellowship project investigating the bacterial hypothesis (M. Kidd & Modlin 1998, p. 11). Contributing to a better division of labor was therefore an inquisitive reason Marshall and Warren possessed in favor of pursuing the bacterial theory.

Marshall and Warren also possessed promise reasons concerning features of the bacterial theory itself. For instance, the theory was testable: there were methods available for culturing and detecting bacteria living in the stomach which had not been applied (e.g., silver staining, as noted above. See (Šešelja & Straßer 2014b, p. 439)). Relatedly, the theory had a valuable associated heuristic, given the extant knowledge of bacteria and bacterial disease. This heuristic suggested new lines for research involving antibiotic treatments, intentional infection, and the already mentioned cultivation and staining methods. In fact, Marshall and Warren pursued just such experiments.

The foregoing list of inquisitive reasons is not exhaustive. Marshall and Warren had a variety of strong inquisitive reasons in favor of pursuing the bacterial theory. The combined strength of these reasons explains why their actions were intellectually courageous, rather than reckless, despite the fact that they lacked a high degree of evidence for the theory when the inquiry began. The theory had relatively weak evidential support in 1980. Moreover, there was strong higher-order evidence against it in the form of scientific consensus view that it was false. Despite these drawbacks, the overall weight of epistemic reasons supported Marshall and Warren in endorsing and pursuing the bacterial theory. The inquisitive reasons outweighed the evidential weakness. This explains why it was worth pursuing, despite the threat this posed to Marshall and Warren's reputations, careers, and health. The expected benefits of pursuing the theory explain why facing this threat was courageous rather than reckless.

4.2 Motivating Inquisitive Reasons: The Higher-Order Proposition Objection

So far in this section, I have argued that inquisitive reasons can provide the missing piece for a theory of intellectual courage. Now, I will argue that they are needed for doing so by addressing an objection based on alternative explanations of the missing piece.

One might worry that we don't need a new kind of reason to explain how researchers like Marshall and Warren are rational to pursue unlikely theories. Instead, the objection goes, what justified Marshall and Warren in pursuing the bacterial theory was just more evidence. However, this additional evidence supports target propositions besides the theory in question. For instance, perhaps Marshall and Warren had evidence for propositions such as *P*: *the bacterial theory is somewhat plausible*; or *N*: *the bacterial theory is not ruled out by the*

available evidence; or *U*: *the bacterial theory would provide a great deal of understanding if it is true*. Evidence for these higher-order propositions, one might think, can explain the epistemic benefit that made the apparent threat worth risking for Marshall and Warren.²⁵

This is a significant worry. For any intellectually courageous act, there are various higher-order propositions that the agent has evidence for. If these higher-order propositions can explain why an act would have adequate expected benefit, the motivation for inquisitive reasons would be undermined.

In response, I will offer a dilemma: that for each relevant higher-order proposition *HOP*, either (1) *HOP* fails to offer adequate explanation of the expected benefits of an intellectually courageous act, or (2) the evidence for *HOP* actually constitutes an inquisitive reason favoring the theory.

The three propositions suggested above (*P*, *N*, and *U*) illustrate the first horn of the dilemma: these propositions cannot adequately explain the benefits for Marshall and Warren of pursuing the bacterial theory. Consider *P*, that the bacterial theory was somewhat plausible. *P* was true and Marshall and Warren had evidence for *P* (M. Kidd & Modlin 1998). Moreover, *P* was also important for explaining why pursuit of the bacterial theory was permissible. However, what *P* must provide here is not just *some* reason to think that pursuing *P* is permissible. It must provide an explanation for why pursuing *P*, in particular, offered enough expected epistemic benefit to outweigh the apparent threat of harm. But *P* is a very weak consideration in the bacterial theory's favor: many theories are *somewhat* plausible. It is hard to see how such a weak reason could explain why pursuing the bacterial theory was worth significant risk to health and career.

More importantly, notice that the stress theory was also somewhat plausible. Moreover, it had much stronger evidential support in its favor. So, on an account that only appeals to HOPs, there was far *better* expected benefit from pursuing the stress theory. Thus, *P* cannot provide what was needed to undermine motivation for inquisitive reasons: an explanation for why pursuing the bacterial theory, *in particular*, had adequate expected epistemic benefit. One can say the same thing about *N* and *U*. The stress theory was not ruled out by the evidence. The stress theory would have provided a great deal of understanding, if it were true. While these HOPs are reasons favoring pursuit of the theory, they cannot do the same work as inquisitive reasons in explaining why pursuit of an unlikely theory is intellectually courageous. Appeal to HOPs doesn't explain why it was beneficial for Marshall and Warren to pursue the bacterial theory *rather than* the stress theory.

HOPs like *P*, *N*, and *U* also fail to explain why certain features of the case—the ones constituting promise and social inquisitive reasons—seem like good reasons for Marshall and Warren to pursue the bacterial theory. That no one was working on the theory was a good reason to pursue it. But this was not evidence that the theory was somewhat plausible. In fact, this is (weak) evidence against the plausibility of the theory: if the theory were more plausible,

²⁵Thanks to an anonymous referee at this journal for pressing this objection.

perhaps more people would already be pursuing it. Thus, the higher-order propositions proposed so far do a poor job of accounting for the promise and social inquisitive reasons that Marshall and Warren had to pursue the theory.²⁶

Reflection on this latter problem for *P*, *N*, and *U* suggest a different kind of HOP as a competitor for inquisitive reasons: HOPs that directly and explicitly concern what the agent ought to pursue. Applied to the peptic ulcer case, the proposition would be *OPB*: *Marshall and Warren ought to pursue the bacterial theory*. This is inspired by the above-mentioned Reasons as Evidence view about the nature of reasons and favoring (Kearns & Star 2009). The advantage of *OPB* is that it directly concerns what the agents ought to pursue. This means that propositions concerning the promise of the theory itself, and those concerning the social context, will count as evidence for *OPB*. Thus, there is a set of evidence that supports *OPB* that does not support that Marshall and Warren ought to pursue the stress theory: the same propositions I have been calling promise and social inquisitive reasons. This explains why Marshall and Warren ought to have pursued the bacterial theory, in particular, rather than the stress theory.

OPB and similar propositions run into the other horn of the dilemma: Evidence for *OPB* constitutes inquisitive reasons in favor of the bacterial theory. That few researchers were pursuing the bacterial theory (*F*) is evidence for *OPB*, given appropriate background beliefs and the right sense of “ought”. But the relevant sense of “ought” must concern what will promote successful inquiry, and the background beliefs must suggest that working on a neglected theory will do so. Otherwise, *F* would not be evidence for *OPB*. And this makes it clear that *F* just is an inquisitive reason to pursue the bacterial theory, according to IR. *F* favors pursuing the bacterial theory because doing so will promote successful inquiry. This is perfectly compatible with thinking that *F* is evidence for *OPB*. What is crucial for my account is that *F* is not evidence for the bacterial theory. Contrast *F* with the experimental results produced by Marshall’s infected-broth self-experiment, including *H*: *H. pylori causes stomach infection*. The way *H* and *F* favor the bacterial theory are clearly distinct: *H* is evidence for the bacterial theory, but *F* is evidence against it. This is true despite the fact that they both favor pursuing the bacterial theory, and they both serve as evidence for *OPB*.

Thus, we can distinguish inquisitive reasons for a theory from evidence for the theory. Inquisitive reasons favor pursuing the theory because doing so will promote successful inquiry. Evidence favors a theory because it makes the theory more probable. These two categories of reasons for a theory are distinguishable. This is true even if RaE is true and all reasons for action are reducible to evidence that one ought to act. What is crucial is that inquisitive reasons comprise a category of reasons to pursue a theory that are distinct from evidence for that theory. Evidence that one ought to pursue a theory because doing so will promote successful inquiry is importantly different from evidence that the theory is true. We need this category of reason to explain the expected epis-

²⁶In section 5, I will argue that we shouldn’t think these are merely practical reasons, either.

temic benefit of intellectually courageous acts such as Marshall and Warren's. Moreover, this category has been neglected: epistemic evaluation has focused on evidence for a target proposition's belief-worthiness. This leaves out considerations about why pursuing a theory will lead to epistemic benefits. And it is the latter thing we need to supplement the account of intellectual courage.²⁷

In sum, appeal to HOPs does not offer a suitable alternative to inquisitive reasons for supplementing accounts of intellectual courage. For each HOP, either it cannot play that role, or the evidence supporting the HOP constitutes an inquisitive reason. One might look for various other candidate HOPs to play the supplemental role. However, I think each of them will face the same dilemma presented here.

5 Inquisitive Reasons as Epistemic

I have argued that inquisitive reasons are needed to supplement the best account of intellectual courage. I have also suggested that they are epistemic reasons. The primary case for this latter claim is that inquisitive reasons concern the promotion and success of inquiry, and that inquiry is a paradigmatic feature of our epistemic lives. An account of the epistemic (and a field of epistemology) that leaves out inquiry is at best incomplete. In this section, I offer further defense of the claim that inquisitive reasons are epistemic reasons.

5.1 Against the evidence-only view of epistemic normativity

Some epistemologists have taken evidence to be the only kind of epistemic reason. A popular argument for this appeals to the distinction between reasons for action and reasons to be in the state of believing. According to this line, epistemic reasons for P —i.e., evidence for P —are reasons for a belief state that P . Practical and moral reasons are reasons for acting. Thus, the distinction between reason-types is explained in terms of what they are reasons for, i.e., what their objects are (Leary 2020). Then, what it is rational to believe depends entirely upon one's evidence. All epistemic reasons are evidence, and only evidence can be an epistemic reason.²⁸

²⁷Note that while IR is compatible with RaE, this response does not depend on RaE. Opponents of RaE have raised counterexamples to the sufficiency of evidence for reasons (Brunero 2018). There may be similar cases where one has an inquisitive reason for pursuing a theory, but where this doesn't constitute evidence one ought to do so. Alternatively, one may think that RaE gets the order of priority wrong: reasons for action are what explain, or *make it the case*, that one ought to act (Broome 2018; Brunero 2018). In keeping with this, one can suggest that inquisitive reasons are what *make it the case* that one ought to pursue a theory, and only serve as evidence in virtue of this fact. Then, it is even clearer why the higher-order proposition objection fails: even if inquisitive reasons also provide evidence for HOPs, this is only true in virtue of their status as inquisitive reasons.

²⁸For statements of this picture of epistemic normativity, see Shah and Velleman (2005) and Conee and Feldman (2004).

This evidence-only picture should be resisted.²⁹ For one thing, many epistemologists find it plausible that belief-formations and belief-sustainings are themselves acts, or performances, which are rationally evaluable (Chignell 2018). And my evidence for *P* is good reason for me to *form* the belief that *P*.³⁰ Some might doubt this last claim because they accept involuntarism about belief. However, there are a variety of other examples of epistemic reasons for action. For instance, once we make the distinction between pursuing and believing a theory, it should be clear that one can have epistemic reasons to pursue a theory. Pursuing a theory is an action (or multiple actions). And an agent's evidence for a theory is clearly a good reason for the agent to pursue the theory. Thus, we have epistemic reasons for action.³¹ This shows that the reasons for action vs. reasons for states distinction cannot explain the epistemic/practical distinction. This undermines the different objects argument offered for why only evidence can constitute an epistemic reason.

There are also more direct reasons to doubt the evidence-only picture of epistemic reasons. We have already seen how intellectual courage, like Marshall and Warren's, requires that agents be sensitive to non-evidential considerations in determining whether the expected benefits of an act justify running the relevant risks. However, the most important reason to reject this evidence-only picture is that forming beliefs is only one part of our epistemic lives. Beliefs constitute only one stage in inquiry into a question, the end stage of forming a judgment and settling a question.³²

Inquiry consists in many activities besides forming beliefs. Researchers run experiments, undertake literature reviews, design equipment, apply for grants, and present at conferences. All of these are acts of inquiry. But whether these acts are rational under the circumstances depends on more than the evidence in favor of particular claims or theories. This is true even if researchers are motivated only by intellectual goals, and even if all they care about is that they or their community learn the answer to the relevant questions. Whether one (epistemically) ought to run an experiment will depend on what other experiments might be done with the same resources. Whether one ought to pursue a research program will depend on how many other people are already working on that program, and on how much one can contribute to that program versus others. To make decisions about these actions rationally, one must be sensitive to considerations other than evidence.

²⁹Note that rejecting the evidence-only picture does not require rejecting evidentialism *about justification*, which is the thesis that the rationality or justification of a belief depends only on the subject's evidence in its favor (Conee & Feldman 2004). One can agree with this, and still think it is appropriate to evaluate other kinds of acts in terms of inquisitive reasons.

³⁰I take it this is true even if such acts are not *fully* voluntary. See Sosa (2015).

³¹Berker (2018) and Leary (2020) discuss examples of other kinds of epistemic reasons for action. The literature in zetetic epistemology, following Friedman (2020), discusses epistemic norms that govern acts of inquiry, e.g., gathering further evidence or remaining undecided (Millson 2021; Steglich-Petersen 2011; Thorstad 2021) For other accounts of epistemic reasons for action, see (A. Booth 2009; A. R. Booth 2006; Rowbottom 2008; Singer & Aronowitz 2022).

³²For support of the idea that belief is a "settling" attitude see Friedman (2019) and Staffel (2019).

Treating these non-evidential considerations as merely practical elides an important distinction between those who pursue inquiry as a means to some non-epistemic end (like pursuing fame or fortune), and those who pursue inquiry because they care about the success of that inquiry. That an act is likely to promote successful inquiry seems like an importantly epistemic consideration. It concerns obtaining truth (or knowledge), not obtaining fame or fortune. An agent motivated only by their desire to know would do well to pay attention to such considerations. For instance, consider the following reason: that experimental design x costs less money than design y . If the money in question is coming from a limited research budget, this can give very good reason to build experiment x , even if all the scientist making the decision cares about is successful inquiry. With the saved money, the scientist can run more experiments.³³

The same is not true for considerations that may improve how the inquiry makes one look, or how well one can monetize it. Suppose experimental design z is more likely to produce a patentable technology than design x , and the agent in question cares about this because they wish to become rich. This is not plausibly an epistemic consideration. Moreover, it is intuitively quite different than the earlier consideration of finding a more economical experimental design. Treating both of these cases as involving merely practical reasons fails to make normatively important distinctions.

Inquisitive reasons are not the only kind of non-evidential epistemic consideration.³⁴ Recently, following Friedman (2020), there has been new interest in norms of inquiry in epistemology (Millson 2021; Steglich-Petersen 2021; Thorstad 2021; ?). Friedman calls these norms of inquiry “zetetic norms.” This literature has been most interested in norms concerning when inquiry should continue or when it should be closed, and norms governing evidence collection. The existence of these other kinds of non-evidential epistemic norms provides further reason that the evidence-only view of epistemic normativity should be rejected.

In sum, given the reasons just discussed, and given the way inquisitive reasons shed light on the epistemic virtue of intellectual courage, we should resist the evidence-only view of epistemic normativity. It provides an impoverished and inadequate account of the epistemic norms governing our intellectual lives.

Before moving on, it is worth discussing the relationship of inquisitive reasons and zetetic normativity. I am sympathetic to the idea that inquisitive reasons represent one type of zetetic reason. However, the arguments for inquisitive reasons and for their epistemic status do not depend on the argu-

³³This is a consideration of what Peirce called “scientific economy” (McKaughan 2008).

³⁴The literature on epistemic responsibility, for instance, involves non-evidential epistemic norms (Code 1987; Hieronymi 2008; Kornblith 1983; Montmarquet 1992). Virtue epistemologists have elsewhere advocated for non-evidential epistemic normativity (Axtell 1997, 2008; Zagzebski 1996). Some philosophers of science have explicitly argued that promise (or pursuitworthiness) considerations can be epistemic (Seselja, Kosolovsky, & Straßer 2012; Šešelja & Straßer 2014a; Shaw 2020; Whitt 1992).

ments for other zetetic norms. If it turns out that only practical (Goldberg 2020) or instrumental (Kelly 2003) reasons bear on whether to continue or close inquiry, there will still be a need for inquisitive reasons. Some inquisitive reasons concern what acts or performances an agent should undertake, given their commitment to inquire into a question. For instance, given that Marshall and Warren had decided to research peptic ulcer disease, the distribution of labor in the field gave them inquisitive reason to pursue the bacterial theory. This is true even if we accept that the only reasons they had to *begin* inquiry were the practical benefits of the research. So, these inquisitive reasons are distinct from reasons to inquire, or to continue inquiring. As I have argued, we need inquisitive reasons to give a full account of intellectual courage. So, the arguments for inquisitive reasons are independent of the arguments for other zetetic norms/reasons. This shows that inquisitive reasons are important regardless of how things turn out with respect to other zetetic norms, but the arguments here also provide an independent source of evidence for the idea of zetetic normativity.

5.2 Sandwiches and Wrong-kind Reasons

I have argued that the evidence-only view of epistemic normativity should be rejected because it offers an impoverished view of the epistemic. However, one might wonder whether the resulting view — one that includes inquisitive reasons as epistemic reasons — is too permissive. How do we distinguish practical and moral considerations which govern acts of inquiry from those in an expanded notion of the epistemic? This worry is made concrete by appeal to cases of what we can call *sandwich reasons*.³⁵

A sandwich reason is a consideration which makes it more likely that an epistemic goal will be achieved, but which intuitively does not seem to be a genuinely epistemic reason. They take their name from cases like the following:

Sandwich Reason Sammy must decide between pursuing one of two theories, A or B. This choice, in turn, will determine which of two labs he will work in. Sammy evaluates the epistemic merits of both theories, and decides they are equal or on a par. However, he also notices that lab A is located next-door to his favorite sandwich shop. Sammy is a slightly more productive worker after having a delicious sandwich. Thus, he is (slightly) more likely to succeed in his research if he joins the lab working on A, and so inquiry in general is (slightly) more likely to be successful.

That *lab A is next to the sandwich shop* is a sandwich reason. It is a reason which favors an act of inquiry: *pursuing theory A*. And moreover, it favors this act because it concerns promotion of successful inquiry: by hypothesis, Sammy

³⁵Discussions of cases involving sandwich reasons can be found in Horowitz (2018), Arpaly (2017), and (Singer & Aronowitz 2022).

is more likely to succeed if he gets delicious sandwiches, and this is why the presence of the shop favors the act. However, intuitively, such reasons are not genuine epistemic reasons. If Sammy is asked by a supervisor, funding agency, or conference audience why he chose to endorse or pursue theory A, that “the lab is near a good sandwich place” is not an acceptable response.

Given the account offered above (section 3), sandwich reasons might appear to be inquisitive reasons: they favor an act of inquiry and do so because they concern the promotion of successful inquiry. However, sandwich reasons are, intuitively, not genuine epistemic reasons. This threatens to undermine the claim that inquisitive reasons are genuinely epistemic.

How can we avoid this result? I suggest that the difference between inquisitive reasons and sandwich reasons depends on the way the former satisfy the internal standards of epistemic practices. Specifically, I want to argue that sandwich reasons are “wrong-kind” reasons (Schroeder 2010) for acts of inquiry, while inquisitive reasons are “right-kind” reasons.³⁶ Whether a reason is right- or wrong-kind for an act depends on what type of activity or practice the act is part of. Sandwich reasons are not inquisitive reasons because they are the wrong kind of reason for an epistemic act. The parenthetical “right kind of way” requirement in IR is meant to exclude *wrong-kind* reasons. Thus, sandwich reasons do not provide a counterexample to thinking inquisitive reasons are epistemic reasons.

This appeal to the right-kind/wrong-kind reasons distinction draws on a tradition that uses the internal standards of a type of activity to explain a) the independence of certain kinds of normative evaluation (e.g., epistemic norms), and b) the right-kind/wrong-kind reasons distinction. While there is not space to give a full defense of this kind of view here, further defense and motivation can be found in previous work in the tradition.³⁷

A practice is a kind of human activity with a particular set of aims, norms, and standards. These aims and standards are *internal* to that practice, in the following sense: a practitioner’s performance can be evaluated according to these aims and standards in a way that is independent of other forms of evaluation. Schroeder calls the internal standards the “standards of correctness” for a particular activity (2010). A reason counts as being of the right kind if it concerns whether a performance is a good one for the kind of activity it is.

³⁶As above, I will continue talking about acts of inquiry, but we could just as easily talk about wrong-kind reasons for states like belief, as in Maguire and Woods (2020) and Singh (2021).

³⁷I am here drawing most heavily on Schroeder (2010), who offers an influential account of the right-kind/wrong-kind reasons distinction that appeals to the internal standards of an activity. I use the term “practice” to pick out the kinds of activities that have internal standards. Maguire and Woods (2020) appeal to Schroeder’s account to offer a view of epistemic normativity, but they focus exclusively on belief-formation and evidence. Singh (2021) provides another account of epistemic reasons as the right kind of reasons for belief. Sosa (2007, 2015) appeals to the notion of a “critical domain” to help determine the standards of reliability required for knowledge and justification. The notion of *practice* I am appealing to here is inspired by the theories of MacIntyre (2007), Sosa (2015), Longino (1990), and Solomon (1994). Goldberg appeals to a similar notion of a social practice when considering several related issues about practical reasons to inquire (2020) and the phenomenon of “should have known” criticisms (2017).

A wrong-kind reason, in contrast, is a reason that favors doing an act but that doesn't suggest that the act is a good one for the kind of activity it is (or for the kind of practice it takes part in).

Sports and games are practices which provide helpful illustration of the right-kind/wrong-kind distinction. For instance, the internal aim of bowling is to win the game. However, not every action which promotes winning is one the player has a good bowling-reason (i.e., the right kind of reason) to perform. For instance, an action that physically intimidates the opponent may make one more likely to win. But the fact that intimidation would promote winning is not an acceptable reason to draw a firearm, according to the standards of the practice.³⁸ There are only certain ways to promote winning which meet the internal standards of good conduct in bowling.

Agents partaking in a practice will generally have other aims in addition to the aims of the practice. Moreover, they may be engaging in the practice merely as a means to some ultimate, more important goal. Most bowlers play the game for fun, rather than because they take winning bowling games to be intrinsically valuable. However, if some act is an act of bowling (rather than merely rolling a heavy ball around), then it will make sense to evaluate the act for how well it promotes the internal goal of winning the game. This is true even if the bowler herself does not care about winning.

The internal aims and standards of practices help explain the phenomena of wrong-kind reasons. Right-kind reasons concern whether the act would be a good one by the relevant practice's standards. In Schroeder's terms, they bear on the "correctness" of the act given the kind of act it is (2010). For instance, that a particular trajectory of throw makes a split less likely is a reason of the right kind for that throw, according to bowling standards. In contrast, a wrong-kind reason favors an act in a way that does not concern whether it would be a good act by the relevant practice's internal standards. In other words, it does not speak to whether the act is a good one for the kind of act it is.

We can identify at least three types of wrong-kind reasons. The first is the most familiar: it involves reasons concerning the promotion of goals that are external to the practice. For instance, a bowler might be offered a great deal of money to lose a game. That a particular bowling act will make one wealthier is a wrong-kind reason, because it involves an aim other than the internal aim. A second type of wrong-kind reason are those that concern promotion of a practice's aims, but where this promotion violates the internal standards of the practice. That a way of bowling would physically intimidate another bowler is a wrong-kind reason for a particular bowling action.

A third type of wrong-kind reason is the most relevant for this discussion. Some wrong-kind reasons concern promoting the internal aim of a practice, but do so only by virtue of enabling some action that is outside the bounds of the practice. This might not involve any kind of cheating, or a violation of explicit rules, but involves engaging in activities that are not properly part of

³⁸Drawing a firearm during league play will likely contravene a number of any league's bylaws. See also the chess example in Maguire and Woods (2020).

the practice in question. The following case is meant to illustrate this third type of wrong-kind reason:

Pity chess Dennis is recently bereaved and is playing chess with his friend Zac. Dennis knows Zac will sympathize with him if he talks about his grief, and so will take it easy on him. Dennis moves his queen to d4, a vulnerable but otherwise advantageous position, counting on Zac's sympathy to protect his piece. This allows Dennis to win the game on the next move.

Here, Dennis has a reason to move his queen to d4. This reason is that it will position him to play upon Zac's sympathies. Without this connection to the action of engendering sympathy, Dennis would not have a reason to move his queen to d4. That he can use this position via engendering sympathy is a reason that concerns winning the game. But it concerns winning the game in the wrong kind of way. It involves a performance (engendering sympathy) that is outside the practice or activity of chess playing. The reason here — *that moving queen to d4 will enable me to win when combined with engendering sympathy* — is not a reason to think that *queen to d4* is a good chess move, considered by the internal standards of chess. Dennis's move is not a good chess move, despite the fact that it makes him more likely to win. It only makes him more likely to win because it enables an action that isn't part of chess at all. Hence, that a move enables winning via engendering sympathy is a wrong-kind reason for making the move. *Pity chess* exemplifies the third type of wrong-kind reason. I want to suggest that sandwich reasons are wrong-kind reasons of this type, too.

Fields of inquiry are also practices. Practices of inquiry have internal epistemic aims. For instance, Marshall and Warren were taking part in a particular practice of biomedical inquiry, with an aim of learning the causes of peptic ulcer disease. This practice also has its own internal standards. These standards determine, among other things, what types of evidence are acceptable within the practice. In medical research, not all forms of evidence are considered legitimate. Researchers are limited to evidence obtained through peer-reviewed studies. Evidential standards like these, however, are not the only kinds of internal standards governing proper research conduct in biomedical research.

Marshall and Warren had inquisitive reasons to pursue the bacterial theory. Their inquisitive reasons favored working on the theory as a way to promote successful inquiry into peptic ulcer disease. For instance, the relative neglect of a live theory is the kind of consideration which bears on how good an act of pursuit would be, by the standards internal to the practice. This is because scientific research is a cooperative activity. How good your scientific performances are depends on how well they integrate with others' efforts, and how well they support the success of the cooperative endeavor. For these reasons, the internal standards of medical research plausibly rule in considerations of how many people are already working on an idea. Hence, distribution of cognitive labor provides a right-kind inquisitive reason.

On the other hand, whether there is a good sandwich shop nearby may impact a researcher's productivity, but this does not bear in the right kind of way on the quality of one's performance in choosing a theory to pursue. This is because eating a sandwich is not any way of inquiring. It falls outside the scope of the practice. Sandwich reasons are wrong-kind reasons of the third-type: they involve activities that are outside the practice of inquiry. Eating a sandwich is not a performance within the activity of inquiry. That pursuing a particular theory will enable eating sandwiches does not bear on whether pursuing that theory is a good act by the internal standards of inquiry. Moreover, that a theory's associated lab is near a sandwich shop does not make choosing that theory better as an act of inquiry. The internal standards of inquiry do not countenance reasons that only bear on the aims of the practice in virtue of their connection to extra-practice activities.

The claim, then, is that sandwich reasons are wrong-kind reasons of the third type. They are analogous to the wrong-kind reason in *pity chess*. They involve promoting the internal aim of a practice, but only insofar as they enable actions which fall outside the purview of the practice. As a result, they do not bear on the goodness of an act as an act of inquiry, given the internal standards of practices of inquiry. I take it that examples of this third type of wrong-kind reason can be generated for any kind of practice. So, it is unsurprising that we would see them for practices of inquiry (just as we see examples of wrong-kind reasons of the other two types). And sandwich reasons have the characteristics of this kind of wrong-kind reason.

If that is correct, then a view which treats inquisitive reasons as epistemic does not overgenerate, at least with respect to sandwich reasons. Wrong-kind reasons for inquiry do not qualify as inquisitive reasons as they are defined above. Thus, allowing inquisitive reasons into the category of the epistemic does not counter-intuitively result in treating sandwich reasons as epistemic.³⁹

6 Conclusion

Inquisitive reasons help explain why Marshall and Warren were intellectually courageous rather than reckless. The concept of an inquisitive reason provides the missing piece in the account of intellectual courage more generally. Since inquisitive reasons are epistemic, they help explain the expected epistemic benefits of courageous action which in turn help distinguish intellectual courage from recklessness and cowardice. Moreover, this account can easily be extended to other cases of intellectual courage. The usefulness of inquisitive reasons in providing an account of intellectual courage also provides support for treating inquisitive reasons as epistemic reasons. Recognition of Inquisitive reasons also provides support for a more expansive view of epistemic normativity.

Inquisitive reasons can also be used to supplement our theories about other intellectual virtues. They will be particularly helpful with respect to virtues

³⁹For additional arguments that inquisitive reasons are epistemic reasons, see Fleisher (2022).

that require weighing the potential benefits of an act against some obstacle or cost to inquiry. For example, Baehr identifies a list of “endurance” virtues that involve enduring in the face of some difficulty, including: intellectual perseverance, courage, determination, patience, diligence, and tenacity (2011, p. 21). For these virtues, just as for courage, we will need an account of what makes an act of inquiry worth persisting in, despite the costs. The account of inquisitive reasons can thus provide a useful supplement to theories of other endurance virtues, e.g., accounts of intellectually virtuous perseverance (Battaly 2017; King 2014).

Acknowledgements

For helpful comments on this paper, I would like to thank Zach Barnett, Carl Craver, Arianna Falbo, Megan Feeney, Branden Fitelson, Sanford Goldberg, Eric Bayruns Garcia, James Goodrich, Elizabeth Jackson, Lisa Miracchi, Anya Plutynski, Dunja Šešelja, Will Shumaker, Ernest Sosa, Merve Tapinc, and Mark Walker. I would also like to thank audiences at the 2020 Meeting of the St. Louis Area Philosophy of Science Association, the Brown Epistemology Reading Group, the Social Epistemology Network WIP series, the Northeastern Epistemology Workshop 2021, and the 2022 Central Division Meeting of the APA.

References

- Alvarez, M. (2017). Reasons for Action: Justification, Motivation, Explanation. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2017 ed.). Metaphysics Research Lab, Stanford University.
- Aristotle. (2014). *Nicomachean Ethics* (R. Crisp, Ed.). Cambridge University Press.
- Aronowitz, S. (2021). Exploring by Believing. *The Philosophical Review*, forthcoming.
- Arpaly, N. (2017). Epistemology and the Baffled Action Theorist. *manuscript*.
- Axtell, G. (1997). Recent work on virtue epistemology. *American Philosophical Quarterly*, 34(1), 1–26.
- Axtell, G. (2008). Expanding epistemology: A responsibilist approach. *Philosophical Papers*, 37(1), 51–87. doi: 10.1080/05568640809485214
- Baehr, J. S. (2011). *The inquiring mind: On intellectual virtues and virtue epistemology*. Oxford University Press on Demand.
- Barnett, Z. (2019). Philosophy without belief. *Mind*, 128(509), 109–138. doi: 10.1093/mind/fzw076
- Barseghyan, H., & Shaw, J. (2017). How Can a Taxonomy of Stances Help Clarify Classical Debates on Scientific Change? *Philosophies*, 2(4), 24.
- Battaly, H. (2008). Virtue Epistemology. *Philosophy Compass*, 3(4), 639–663. doi: 10.1111/j.1747-9991.2008.00146.x
- Battaly, H. (2017). Intellectual Perseverance. *Journal of Moral Philosophy*, 14(6), 669–697. doi: 10.1163/17455243-46810064
- Berker, S. (2018). A combinatorial argument against practical reasons for belief. *Analytic Philosophy*, 59(4), 427–470. doi: 10.1111/phib.12140

- Booth, A. (2009). Motivating epistemic reasons for action. *Grazer Philosophische Studien*, 78(1), 265–271. doi: 10.1163/9789042026056_013
- Booth, A. R. (2006). Can there be epistemic reasons for action? *Grazer Philosophische Studien*, 73(1), 133–144. doi: 10.1163/18756735-073001008
- Broome, J. (2013). *Rationality through reasoning*. John Wiley & Sons.
- Broome, J. (2018). Reason fundamentalism and what is wrong with it. *The Oxford Handbook of Reasons and Normativity*, 297.
- Brunero, J. (2018). Reasons, evidence, and explanations. In D. Star (Ed.), *The Oxford handbook of reasons and normativity* (pp. 321–341). Oxford, UK: Oxford University Press.
- Chignell, A. (2018). The Ethics of Belief. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Spring 2018 ed.). Metaphysics Research Lab, Stanford University. <https://plato.stanford.edu/archives/spr2018/entries/ethics-belief/>.
- Clifford, W. K. (1947). *The Ethics of Belief and Other Essays*. Prometheus Books.
- Code, L. (1987). *Epistemic Responsibility*. Published for Brown University Press by University Press of New England.
- Cohen, L. J. (1989). Belief and acceptance. *Mind*, 98(391), 367–389. doi: 10.1093/mind/XCVIII.391.367
- Conee, E., & Feldman, R. (2004). *Evidentialism: Essays in Epistemology*. Oxford University Press.
- De Cruz, H., & De Smedt, J. (2013). The value of epistemic disagreement in scientific practice: The case of homo Floresiensis. *Studies in History and Philosophy of Science Part A*, 44(2), 169–177. doi: 10.1016/j.shpsa.2013.02.002
- Dotson, K. (2011). Tracking Epistemic Violence, Tracking Practices of Silencing. *Hypatia*, 26(2), 236–257. doi: 10.1111/j.1527-2001.2011.01177.x
- Fleisher, W. (2018). Rational endorsement. *Philosophical Studies*, 175(10), 2649–2675. doi: 10.1007/s11098-017-0976-4
- Fleisher, W. (2021). How to endorse conciliationism. *Synthese*, 198(10), 9913–9939. doi: 10.1007/s11229-020-02695-z
- Fleisher, W. (2022). Pursuit and inquisitive reasons. *Studies in History and Philosophy of Science Part A*, 94(C), 17–30. doi: 10.1016/j.shpsa.2022.04.009
- Fricker, M. (2007). *Epistemic Injustice: Power and the Ethics of Knowing*. Oxford University Press.
- Friedman, J. (2019). Inquiry and Belief. *Noûs*, 53(2), 296–315. doi: 10.1111/nous.12222
- Friedman, J. (2020). The epistemic and the zetetic. *Philosophical review*, 129(4), 501–536.
- Fukuda, Y., Shimoyama, T., & Marshall, B. (2002). Kasai, Kobayashi and Koch's postulates in the history of *Helicobacter pylori*. In *Helicobacter pioneers: Firsthand accounts from the scientists who discovered helicobacters, 1892-1982* (pp. 15–24). Blackwell.
- Goldberg, S. C. (2017). Should Have Known. *Synthese*, 194(8), 2863–2894. doi: 10.1007/s11229-015-0662-z
- Goldberg, S. C. (2020). On the epistemic significance of practical reasons to inquire. *manuscript*.
- Goldman, A. I. (1986). *Epistemology and cognition*. Cambridge, MA: Harvard University Press.
- Habgood-Coote, J. (2022). Group inquiry. *Erkenntnis*, 87, 1099–1123. doi: 10.1007/s10670-020-00232-5
- Harding, S. (1991). *Whose Science? Whose Knowledge? Thinking From Women's Lives*.

- Cornell University.
- Hieronymi, P. (2008). Responsibility for believing. *Synthese*, 161(3), 357–373.
- Horowitz, S. (2018). Predictably misleading evidence. *Higher-Order Evidence: New Essays*.
- Hursthouse, R. (1999). *On virtue ethics*. Oxford: Oxford University Press.
- Hursthouse, R., & Pettigrove, G. (2018). Virtue Ethics. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2018 ed.). Metaphysics Research Lab, Stanford University.
- Kearns, S., & Star, D. (2009). Reasons as evidence. *Oxford Studies in Metaethics*, 4, 215–42.
- Kelly, T. (2003). Epistemic rationality as instrumental rationality: A critique. *Philosophy and Phenomenological Research*, 66(3), 612–640.
- Kelly, T. (2008). Evidence: Fundamental Concepts and the Phenomenal Conception. *Philosophy Compass*, 3(5), 933–955. doi: 10.1111/j.1747-9991.2008.00160.x
- Kelly, T. (2016). Evidence. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2016 ed.). Metaphysics Research Lab, Stanford University.
- Khalifa, K., & Millson, J. A. (2020). Perspectives, Questions, and Epistemic Value. In M. Massimi & A.-M. Cretu (Eds.), *Knowledge From a Human Point of View* (pp. 87–106). Cham: Springer Verlag.
- Kidd, I. J. (2019). Epistemic Courage and the Harms of Epistemic Life. In H. Battaly (Ed.), *The Routledge Handbook to Virtue Epistemology* (pp. 244–255). New York: Routledge.
- Kidd, M., & Modlin, I. M. (1998). A Century of Helicobacter pylori. *Digestion*, 59(1), 1–15.
- King, N. L. (2014). Perseverance as an intellectual virtue. *Synthese*, 191(15), 3501–3523. doi: 10.1007/s11229-014-0418-1
- Kitcher, P. (1990). The division of cognitive labor. *The Journal of Philosophy*, 87(1), 5–22. doi: 10.2307/2026796
- Kornblith, H. (1983). Justified belief and epistemically responsible action. *The Philosophical Review*, 92(1), 33–48.
- Kuhn, T. S. (1970). *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Lacey, H. (2015, October). ‘Holding’ and ‘endorsing’ claims in the course of scientific activities. *Studies in History and Philosophy of Science Part A*, 53, 89–95. doi: 10.1016/j.shpsa.2015.05.009
- Lakatos, I. (1978). *The Methodology of Scientific Research Programmes*. Cambridge University Press.
- Laudan, L. (1978). *Progress and its problems: Towards a theory of scientific growth*. Berkeley: Univ of California Press.
- Leary, S. (2020). Grounding the domains of reasons. *Australasian Journal of Philosophy*, 98(1), 137–152.
- Levi, I. (1974). *Gambling with Truth: An Essay on Induction and the Aims of Science*. Cambridge: The MIT Press.
- Levi, I. (1980). *The enterprise of knowledge: An essay on knowledge, credal probability, and chance*. Cambridge, MA: MIT Press.
- Longino, H. E. (1990). *Science as social knowledge: Values and objectivity in scientific inquiry*. Princeton: Princeton University Press.
- MacIntyre, A. (2007). *After Virtue: A Study in Moral Theory, Third Edition*. University of Notre Dame Press.
- Maguire, B., & Woods, J. (2020, April). The Game of Belief. *The Philosophical Review*,

- 129(2), 211–249. doi: 10.1215/00318108-8012843
- Maher, P. (1993). *Betting on theories*. Cambridge: Cambridge University Press.
- Marshall, B. J., Armstrong, J. A., McGeachie, D. B., & Glancy, R. J. (1985). Attempt to fulfill Koch's postulates for pyloric campylobacter. *The Medical Journal of Australia*, 142, 436–439.
- McKaughan, D. (2008). From Ugly Duckling to Swan: C. S. Peirce, Abduction, and the Pursuit of Scientific Theories. *Transactions of the Charles S. Peirce Society*, 44(3), 446–468.
- McMullin, E. (1976). The Fertility of Theory and the Unit for Appraisal in Science. In R. S. Cohen, P. K. Feyerabend, & M. Wartofsky (Eds.), *Essays in Memory of Imre Lakatos* (pp. 395–432). Reidel.
- Medina, J. (2013). *The epistemology of resistance: Gender and racial oppression, epistemic injustice, and the social imagination*. Oxford University Press.
- Mercier, H., & Sperber, D. (2011, April). Argumentation: Its adaptiveness and efficacy. *Behavioral and Brain Sciences*, 34(2), 94–111. doi: 10.1017/S0140525X10003031
- Mills, C. (2007). White Ignorance. In S. S. N. Tuana (Ed.), *Race and Epistemologies of Ignorance* (pp. 11–38). State Univ of New York Pr.
- Millson, J. A. (2021). A defeasible calculus for zetetic agents. *Logic and Logical Philosophy*, 30(1), 3–37. doi: 10.12775/lp.2020.019
- Millstein, R. L. (2007). Distinguishing Drift and Selection Empirically: "The Great Snail Debate" of the 1950s. *Journal of the History of Biology*, 41(2), 339–367. doi: 10.1007/s10739-007-9145-5
- Montmarquet, J. (1992). Epistemic Virtue and Doxastic Responsibility. *American Philosophical Quarterly*, 29(4), 331–341.
- Nair, S. (2021). "adding up" reasons: Lessons for reductive and nonreductive approaches. *Ethics*, 132(1), 38–88. doi: 10.1086/715288
- Palmer, E. D. (1954). Investigation of the gastric mucosa spirochetes of the human. *Gastroenterology*, 27(2), 218–220.
- Parfit, D. (1984). *Reasons and persons*. Oxford University Press.
- Pettigrew, R. (2016). *Accuracy and the Laws of Credence*. Oxford University Press Uk.
- Portmore, D. W. (2018). Teleological reasons. In D. Star (Ed.), *The oxford handbook of reasons and normativity*. Oxford University Press.
- Radomski, B., Šešelja, D., & Kim, N. (2021). Rethinking the history of peptic ulcer disease and its relevance for network epistemology. *History and Philosophy of the Life Sciences*, 43, 1–23.
- Roberts, C. (2012). Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics*, 5, 1–69. doi: 10.3765/sp.5.6
- Roberts, R. C., & Wood, W. J. (2007). *Intellectual Virtues: An Essay in Regulative Epistemology*. Clarendon Press.
- Rowbottom, D. P. (2008). An alternative account of epistemic reasons for action: In response to booth. *Grazer Philosophische Studien*, 76(1), 191–198. doi: 10.1163/9789401206020\010
- Scanlon, T. (1998). *What We Owe to Each Other*. Belknap Press of Harvard University Press.
- Scarre, G. (2010). *On Courage*. Routledge.
- Schroeder, M. (2007). *Slaves of the passions*. Oxford University Press.
- Schroeder, M. (2010). Value and the Right Kind of Reason. *Oxford Studies in Metaethics*, 5, 25–55.
- Seselja, D., Kosolosky, L., & Straßer, C. (2012). The rationality of scientific reasoning in the context of pursuit: Drawing appropriate distinctions. *Philosophica (Gent)*,

- 86, 51–82.
- Šešelja, D., & Straßer, C. (2013). Kuhn and the Question of Pursuit Worthiness. *Topoi*, 32(1), 9–19.
- Šešelja, D., & Straßer, C. (2014a). Epistemic justification in the context of pursuit: A coherentist approach. *Synthese*, 191(13), 3111–3141. doi: 10.1007/s11229-014-0476-4
- Šešelja, D., & Straßer, C. (2014b). Heuristic reevaluation of the bacterial hypothesis of peptic ulcer disease in the 1950s. *Acta biotheoretica*, 62(4), 429–454.
- Shah, N. (2003). How Truth Governs Belief. *Philosophical Review*, 112(4), 447–482.
- Shah, N., & Velleman, J. D. (2005). Doxastic Deliberation. *The Philosophical Review*, 114(4), 497–534.
- Shaw, J. (2020, April). Duhem on Good Sense and Theory Pursuit: From Virtue to Social Epistemology. *International Studies in the Philosophy of Science*, 33(2), 67–85. doi: 10.1080/02698595.2021.1888191
- Singer, D. J., & Aronowitz, S. (2022). What Epistemic Reasons Are For: Against the Belief-Sandwich Distinction. In B. Dunaway & D. Plunkett (Eds.), *Meaning, Decision, and Norms: Themes from the Work of Allan Gibbard*.
- Singh, K. (2021). Evidentialism doesn't make an exception for belief. *Synthese*, 198(6), 5477–5494. doi: 10.1007/s11229-019-02416-1
- Sober, E. (2008). *Evidence and Evolution: The Logic Behind the Science*. Cambridge University Press.
- Solomon, M. (1994). Social empiricism. *Noûs*, 28(3), 325–343. doi: 10.2307/2216062
- Solomon, M. (1996). Information and the Ethics of Information Control in Science. *Perspectives on Science*, 4, 195–206.
- Sosa, E. (2007). *A Virtue Epistemology: Apt Belief and Reflective Knowledge, Volume I*. OUP Oxford.
- Sosa, E. (2015). *Judgment and agency*. Oxford: Oxford University Press.
- Staffel, J. (2019). Credences and Suspended Judgments as Transitional Attitudes. *Philosophical Issues*, 29(1), 281–294. doi: 10.1111/phs.12154
- Staley, K. W. (1996). Novelty, Severity, and History in the Testing of Hypotheses: The Case of the Top Quark. *Philosophy of Science*, 63(5), 248–255. doi: 10.1086/289958
- Staley, K. W. (2004). Robust Evidence and Secure Evidence Claims. *Philosophy of Science*, 71(4), 467–488. doi: 10.1086/423748
- Stalnaker, R. (1984). *Inquiry*. Cambridge: Cambridge University Press.
- Star, D. (2018). *The oxford handbook of reasons and normativity*. Oxford University Press.
- Steel, D. (2010). Epistemic values and the argument from inductive risk. *Philosophy of Science*, 77(1), 14–34. doi: 10.1086/650206
- Steglich-Petersen, A. (2011). How to be a teleologist about epistemic reasons. In A. Steglich-Petersen & A. Reisner (Eds.), *Reasons for belief* (pp. 13–33). Cambridge University Press.
- Steglich-Petersen, A. (2021). An Instrumentalist Unification of Zetetic and Epistemic Reasons. *Inquiry: An Interdisciplinary Journal of Philosophy*, forthcoming.
- Strevens, M. (2003, February). The role of the priority rule in science. *The Journal of Philosophy*, 100(2), 55–79. doi: 10.5840/jphil2003100224
- Swanton, C. (2001, October). A Virtue Ethical Account of Right Action. *Ethics*, 112(1), 32–52. doi: 10.1086/322742
- Thorstad, D. (2021). Inquiry and the epistemic. *Philosophical Studies*, 1–16.
- Van Fraassen, B. C. (1980). *The scientific image*. Oxford; New York: Clarendon Press ; Oxford University Press.

- Whitt, L. A. (1992). Indices of theory promise. *Philosophy of Science*, 59(4), 612–634. doi: 10.1086/289698
- Williamson, T. (2000). *Knowledge and its limits*. Oxford: Oxford University Press.
- Zagzebski, L. T. (1996). *Virtues of the mind: An inquiry into the nature of virtue and the ethical foundations of knowledge*. Cambridge University Press.
- Zollman, K. J. S. (2009). Optimal Publishing Strategies. *Episteme*, 6(2), 185–199.
- Zollman, K. J. S. (2010). The Epistemic Benefit of Transient Diversity. *Erkenntnis*, 72(1), 17–35. doi: 10.1007/s10670-009-9194-6