

Inquiry and The Doxastic Attitudes

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1 Introduction

Lucy the scientist starts wondering about how to account for a given biological phenomenon F within cell theory. So, the question Lucy is after can be simply put as follows: *How to explain F ?* Call this question FQ . Lucy has never worked on F , nor has she ever talked about F with her colleagues or heard anything about how others try to explain it. She is therefore genuinely open-minded about how to answer FQ . Lucy starts investigating into F by being neutral as to what the best explanation of F is, and she pursues her inquiry by applying usual standards and methods of scientific research.

The first thing Lucy does is trying to acquire more information about F . By doing so, she quickly realises that the available information is such that there are three possible candidate explanations for F : call them p_f , r_f , and v_f . At some point in her inquiry, Lucy begins to think that p_f is the best shot at explaining F . That is to say, she starts being more inclined towards p_f than towards r_f and v_f . Her inclination is cognitive and inquiry-directed, that is, she starts assigning p_f some inquisitive priority over r_f , and v_f . However, Lucy notices that the probative force of all the evidence she has collected needs to be assessed more thoroughly than she has so far done in order to establish whether that evidence will indeed favour p_f over r_f and v_f . Moreover, the coherence of p_f with other well-established biological truths has yet to be checked. So, Lucy is very well aware that the situation is still epistemically equivocal. Thus, even if Lucy takes p_f to be the best way of answering FQ , she is not yet ready to unqualifiedly say something like: ' p_f explains F '. Rather, she is disposed to check whether p_f

coheres with well-established biological truths,¹ to explain away the recalcitrant piece of data allegedly speaking against p_f being the explanation of F, to set up new experiments by checking p_f first and the other candidate answers later, and so on and so forth.

I submit that the most natural way to describe Lucy's inquisitive scenario is the following: Lucy is not yet ready to close her inquiry into FQ via p_f . So, she takes her inquiry into FQ to be still open. But she is no longer doxastically neutral about FQ either. Lucy's case, in my opinion, warrants exploration of the idea that some of our inquisitive enterprises are best understood via a *three-stage* model of inquiry:

Three-stage model of inquiry

1. One is open-minded about how to answer the question Q.
2. One is inclined to answer Q in a given way while taking the question to be still open.
3. One closes Q.

The idea of there to be separate stages of inquiry has not gone unnoticed in contemporary philosophy. Several philosophers working on the nature and texture of scientific discovery have acknowledged the existence of a stage of inquiry at which scientists develop their theories after having formulated them and before taking them to be well-established accounts of certain phenomena. Among them, Laudan (1978) expands on N.R. Hanson's work on abduction (see Hanson 1958) by identifying a middle phase between formulation and acceptance of a theory that he dubs "context of pursuit". Laudan's approach, as well as the

¹Clearly, Lucy could also focus on r_f or v_f if doing so would enable her to rule those explanations out by employing less resources. Yet, this point is orthogonal to the inquisitive priority that p_f holds in Lucy's mind. I owe this point to an anonymous referee.

body of literature it has generated,² revolves around the existence of different “contexts of inquiry”. In this paper, I approach the question of the structure of inquiry from a different and underexplored perspective by investigating the nature of the mental state(s) we are in when we inquire into some matter. More specifically, my aim is to bring out the functional and normative features of the attitude of cognitive inclination towards a given answer to a question we have the second stage of what I have called three-stage inquiries.³ As I see it, this question arises irrespective of whether or not the inquiry we are pursuing deserves to be qualified as scientific.⁴ Lucy’s predicament is, I take it, a familiar one. We, qua laypersons, very often find ourselves in situations where we are inclined towards answering a question in a given way without *ipso facto* taking the question to be settled. Suppose I am trying to find a paper about normative requirements I only vaguely recall. I might clearly be inclined towards taking this paper to be authored by John Broome and to have “normative” in the title. I then start inquiring into this accordingly (e.g. by google searching “John Broome and normative” instead of “Nico Kolodny and normative”, for instance).⁵ Clearly, I am inclined towards the proposition *that John Broome is the author of the paper* qua answer to the question of who the author of the paper I am looking for is, but I do not yet take my inquiry into this question to be settled. Hence, even if I will use Lucy’s case as a foil throughout, my considerations are meant to carry over to all the inquiries exhibiting the three-stage structure schematically outlined above.

² See e.g. McKaughan (2008) and Whitt (1990) for different overviews of the literature on scientific pursuit-worthiness.

³ As far as I am aware, the only notable exception is a recent article by Will Fleisher (2018) with which I will engage at various points of the present investigation.

⁴ To forestall misunderstandings: The role of Lucy’s case is not to offer a faithful reconstruction of scientific practice but rather to illustrate the possibility of three-stage inquiries by giving it some concreteness.

⁵ I would like to thank Tim Schroeder for suggesting this nice example to me.

Before getting into the main discussion, let me also clarify that I am not claiming that inquiry usually is a three-stage process, nor am I suggesting that certain inquiries necessarily obey the three-stage model. Lucy's case is meant to show that at least some of our inquisitive enterprises intuitively fall under the three-stage model. Since the main aim of this paper is to examine the nature of the mental state we are in when we are cognitively inclined towards a given answer to a question, the issue of whether there are types of inquiry that in principle couldn't be conducted in a two- or three-stage way will have to be deferred to further works.

That being said, the plan for the paper is as follows. In section 2 I argue that a proper account of the second stage of a three-stage inquiry requires specifying a functionally distinctive type of doxastic attitude that I shall call, for labelling purposes, "hypothesis". In section 3 I unpack the distinctive normative profile of hypothesis. The discussion in sections 2-3 is conducted by contrasting hypothesis with more familiar doxastic attitudes, such as suspended judgement and full belief. In section 4 I claim that hypothesis is a *sui generis* doxastic attitude, that is, it does not reduce to credences or metacognitive states of mind, such as a belief about the epistemic status of a given proposition. In section 5 I sketch out the epistemological significance of the attitude of hypothesis.

2 Stages of open inquiry: functional differences and their consequences

To get a grip on what the difference between the first and the second stage of open inquiry is I will avail myself of some remarks offered by Jane Friedman (2017, forthcoming), whose views about inquiry and the doxastic attitudes will provide helpful foils against which to conduct the present investigation.

Friedman (2017: 303-4) maintains that when one is in an inquiring state of mind, one aims to resolve or answer the question at issue. This comes with (2017: 308) "a sort of

orientation towards or sensitivity to information that bears on the focal question, and perhaps some other related sorts of dispositions to come to know things that will help one close that question". This strikes me as correct, but how does it translate into inquiries such as Lucy's?

I submit that at the first stage the inquirer starts collecting evidence and information while being completely open to the possibility that various candidate answers are equally good answers to the question, whereas at the second stage the inquirer puts one of these candidate answers first with the aim of assessing it more carefully against the collected data. So, at the second stage, the inquirer keeps on being sensitive to the information that bears on the question. Yet, she is sensitive to it in a specific way. For instance, she focuses on whether the information she has collected supports closing the question through a specific answer amongst the available candidates. Or else, she makes sure that the answer she is cognitively inclined towards coheres with other relevant well-established truths and general principles. To illustrate these rather abstract claims, let us take Lucy's case. We can easily envisage that whenever a new F-related experiment can be conducted and there's a variable within the experiment having to do with the kind of predictions to expect conditional upon a given explanation of F, Lucy is disposed to start the experiment by taking p_f first and use it as the relevant value for the variable. Moreover, if she came across to a piece of recalcitrant evidence which seems to undermine p_f , she would be disposed to see whether such new evidence can be explained away rather than immediately taking it at face value. Plausibly, Lucy would also be disposed to check whether p_f does cohere with more general and well-established biological principles.

This gives us a first pass characterisation of the differences between what one is disposed to do at the first stage and at the second stage of an open inquiry. What do these observations tell us about the type(s) of attitude we entertain while inquiring into some

matter? More specifically: what do they tell us about the attitude of cognitive inclination one holds at the second stage of inquiry?

2.1 The Suspended Judgement Answer

Friedman offers an indirect answer to the previous question by defending the following biconditional (Friedman 2017: 302):

(BICON)

Necessarily: One is in an inquiring state mind about some matter if, and only if, one is suspended about that matter.

By proposing (BICON), Friedman expands on the traditional insight – which can be traced back to the works of Descartes and Sextus Empiricus – of there to be a close connection between inquiry and suspended judgement. Suspended judgement, on Friedman’s view (2017: 303-4), is a doxastic attitude standing for a committed state of epistemic neutrality or indecision whose content is a question.⁶ Questions are abstract objects which differ from propositions in that the latter are endowed with (or simply are) truth-conditions, whereas the

⁶ A clarification is in order here. I will keep on endorsing Friedman’s characterisation of suspended judgement for the sake of simplicity, but let emphasise that the correctness of the view I will put forward does not rely on the correctness of her account of suspended judgement. All I need in order to distinguish between the first and the second stage of open inquiry is the distinction between a stage at which the inquirer is epistemically neutral and a stage at which she no longer is. The kind of epistemic neutrality I am interested in could be equally delivered by other accounts of suspended judgement.

former are not. Questions can be seen as sets of possible answers determined by the form of the question, where answers are propositions.⁷

Importantly, (BICON) contains an answer to the focal question of this paper: since being in an inquiring state of mind towards a given matter just is being suspended about it, and since one is in such an inquiring state of mind at both stages of open inquiry, it follows that one just is suspended at both stages of open inquiry. Call this the *Suspended Judgement Answer*.

I agree with the right-to-left side of (BICON): being suspended about a question is a doxastic hallmark of open inquiry. Yet, I disagree with its left-to-right side. That is to say, I believe that the Suspended Judgement Answer is incorrect. To see why, notice that in order for the Suspended Judgement Answer to succeed, such an answer has to take proper account of the fact that the inquirer is disposed to make different inquisitive moves at different stages of open inquiry. To do so, one might maintain that at both stages the inquirer is suspended and that the focal question she is suspended about changes from stage to stage. For instance, one can make sense of Lucy's changing stages of inquiry by saying that while at the first stage she is suspended about FQ, at the second stage she is suspended about whether p_f is well supported by the available evidence.

However, closer inspection reveals that this proposal runs into what I will call the *Unity of Inquiry Problem*. The problem arises from the following line of reasoning. The left-to-right side of (BICON) tells us that if one inquires into some matter M, then one is suspended about Q. Now, if we accept the idea that at different stages of inquiry one is not suspended about the

⁷ For more details about questions and answers, see Friedman (2013). Let me just draw the reader's attention to an important distinction between *answers* and *responses* to a question pointed out in Friedman (2013). If we are inquiring into the question of whether Matthew made it to the party, this question has two possible answers only: either he made it, or he did not. However, one can respond to this question by saying "Who's Matthew?", "Which Party?", and so on. I am here interested in answers and not in responses.

same Q, we have that, at the second stage, one is not suspended about Q. It follows that at the second stage of inquiry one is not inquiring into M. I want now to show that this reasoning leads to an unwelcome conclusion.

Let us reflect on Lucy's case. Lucy is inquiring into how to explain F. Recall that FQ is the question she is after. The fact that, at the second stage, Lucy shifts the focus of her inquiry onto a given way of answering FQ in no way undermines the fact that she is still inquiring into the same matter, viz. how to best explain F. That is to say, it seems plausible to classify the two stages at which the inquiry is open as being stages of the *same* inquiry, i.e. an inquiry into how to best explain F. Thus, it is reasonable to ask of any account of the attitude Lucy has at the second stage of her inquiry that it keep track of the fact that Lucy has been inquiring into the same matter all along. Thus, since at the second stage Lucy is still inquiring into FQ, FQ must somehow figure in the specification of her state of mind. And yet, if we accepted the claim that at the second stage Lucy is inquiring into a different question than FQ, we would not be able to say that Lucy is inquiring into the same matter at both the first and the second stage of her inquiry. This follows from the claim that inquiring into M entails being suspended about Q *and* the idea that one is suspended about different questions at different stages of the inquiry. Thus, if we accepted the idea that one holds an attitude of suspended judgement at both at the first and the second stage of the inquiry, we would not be able to capture the unity of subject-matter of the inquiry one is pursuing, for the content of the inquiring state of mind would change across stages and there is no other way to specify which M is at stake. This is the Unity of Inquiry Problem.

To forestall misunderstandings: The Unity of Inquiry Problem does not trade upon the idea that suspending judgement about Q and being cognitively inclined towards *p* qua answer to Q are not compossible states of mind. Clearly, just like one can believe *p* and not-*p* at the same time, one can suspend judgement about Q while taking *p* to be the best shot at

answering Q. The Unity of Inquiry Problem is best seen as one of the two horns of a dilemma. The dilemma starts from assuming the Suspended Judgement Answer to the effect that suspended judgement is the *only* type of doxastic attitude that one tokens when one is inquiring into a question. If we maintain this, either we have to deny the existence of three-stage inquiries – in that, given that suspended judgement is a doxastic attitude of epistemic neutrality, we would have to maintain that at the second stage of inquiry Lucy is still merely doxastically neutral about how to explain F – or we have to face the Unity of Inquiry Problem. Since I take both horns to be unacceptable, I conclude that we had better not take the attitude of cognitive inclination one has at the second stage of inquiry to entail (or be reduced to) suspended judgement. This, however, in no way entails that Lucy cannot, in a psychological sense, be suspended about other questions, such as the question of whether an alternative answer to FQ, say r_f , is true while, at the same time being cognitively inclined towards a given proposition.

I have argued that one does not merely hold an attitude of suspended judgement towards a question when one is inquiring into some matter. Being epistemically neutral towards a question and having a cognitive inclination towards a given proposition qua answer to that question are to be seen as the doxastic hallmarks of, respectively, the first and second stage of open inquiry.

2.2 *The Belief Answer*

In this section I assess the prospects for the idea that the cognitive inclination towards p_f manifested by Lucy at the second stage of her inquiry entails believing p_f . If you agree with my description of Lucy's case, this suggestion should immediately strike you as ill grounded. Yet, it is instructive to see what's wrong with it in some detail.

To begin with, let us bear in mind that it has been long acknowledged (see e.g. Stalnaker 1984, Shah and Velleman 2005) that there exist different types of cognitive propositional attitudes. Beyond belief, we talk of ‘supposition’, ‘imagination’, ‘assumption’, and so on. Each of these attitudes carves out a specific way of treating a proposition as true. The very idea of *treating a proposition as true* is meant to be neutral across all these varieties, and it has to be understood minimally as entertaining p cognitively, or putting p before one’s mind when one’s mind is directed towards the world. So, these attitudes differ in their *cognitive mode*, as it were, even if they can have the same content. It is also often claimed that cognitive propositional attitudes are those cognitions which, metaphorically speaking, *aim at truth* (see Shah and Velleman 2005). However, different attitudes aim at truth in different ways. More specifically, when we say that belief aims at truth we can substantiate this metaphor in broadly functionalist terms by saying that belief is the type of attitude whose function in our mental economy is to be true. Thus, the cognitive mechanisms responsible for the regulation of belief work in such a way as to make belief perform its function. We can therefore reformulate the aim metaphor for belief as follows:

(B-AIM)

One believes that p only if one treats p as true for the sake of getting p ’s truth-value right.

The aim metaphor can be unpacked by focusing on two of the dispositions that are stereotypically associated with belief. Belief – unlike other cognitive propositional attitudes – involves a disposition to unqualifiedly assert p in the right circumstances and a disposition to use p in theoretical and practical reasoning. I turn now to argue that such two dispositions are not plausibly associated with the second stage of inquiry.

Let us take the disposition to assert p first and assume, for the sake of the argument, that assertion is the kind of speech act one performs when one (overtly) undertakes a commitment to authorise the hearer to assert p and all that logically follows from it, to take up the challenge of vindicating the assertion by offering considerations that justify it, and to retract it if certain conditions are met (See MacFarlane 2011 for a defence of this view). It seems that, while being at the second stage of inquiry, one is actually checking whether p is in a good epistemic standing, and for this reason one would not recommend others to assert p . Moreover, the conditions under which one ordinarily retracts one's assertions seem unrelated to the second stage of inquiry. Plausibly, one commits oneself to retract one's assertion of p if one knows that not- p , or if one has strong evidence against p . Yet, having strong evidence against the proposition one is cognitively inclined to, as well as knowing its negation, are epistemic statuses one reaches after having investigated further into p , and not while investigating into it qua answer to Q.

The point about not being disposed to assert p when one is cognitively inclined towards it qua answer to Q can be made by looking at a different and highly influential approach to speech acts to the effect that they are type-individuated on the basis of their constitutive rules (see Williamson 2000). Williamson proposes that one must assert p only if one knows that p , whereas other authors have defended weaker truth or justification rules. Failure to comply with any of these rules makes the asserter vulnerable to appropriate criticism and blame. Suppose now that Lucy is at the second stage of inquiry and utters a bare sentence expressing p_f while talking to her boss about where her research on F is leading her.⁸ In such a scenario,

⁸ I am envisaging the possibility that Lucy utters a bare sentence expressing the proposition she is cognitively inclined towards, but the more realistic scenario is such that she utters sentence like " p_f is the best shot at explaining p_f ", "I conjecture p_f ", and so on. To my mind, this suggests that, realistically, Lucy is not disposed to unqualifiedly assert p_f .

we can easily envisage both that p_f is false, and that p_f 's probability on Lucy's evidence does not meet the threshold required for justification. If Lucy's speech act were to be type-individuated as an assertion, her boss could legitimately criticise Lucy's speech act as failing to comply with the chosen rule, in that Lucy does not know, nor has she justification for p_f . Yet, criticising Lucy's representative speech act (see Searle 1976, more on this below) for such reasons is intuitively inappropriate. This suggests that Lucy's speech act is not governed by any of the rules that have been proposed for assertion, thereby lending further support to the idea that one is not disposed to assert the proposition one is cognitively inclined towards at the second stage of inquiry.

Let us turn now to the disposition to use p in practical and theoretical reasoning. It seems plausible to say that Lucy is not disposed to use p_f as a premise in her theoretical and practical reasoning the way she is disposed to use other biological propositions she certainly believes, such as (say) *that the cell is the fundamental unit of structure and organisation and in organisms, that cells contain DNA which is found specifically in the chromosome*, and so on. To see why, suppose that different answers to FQ will have different implications for medical treatment of a pathology T having to do with F. If p_f really is the answer to FQ, then a specific medical treatment for patients displaying F will be the best one to adopt, and other treatments will actually harm the patient. In such a case, Lucy won't take p_f as a premise in her reasoning about how to act regarding how to treat T. This suggests that the conditions under which we are disposed to rely on a proposition in practical reasoning while being at the second stage of inquiry are different from the ones we stereotypically associate with belief.

In summary, I have argued that being cognitively inclined towards p qua answer to a given question does not entail believing p . If anything, we had better regard belief as a way –

arguably the most common one – of taking p to be the answer whereby to close the question one is inquiring into (in the affirmative).⁹

2.3 *The Hypothesis Answer*

In light of the arguments of sections 2.2 and 2.3, my proposal is to introduce a new type of doxastic attitude, which I will label “hypothesis”, to make sense of what happens cognitively at the second stage of inquiry.¹⁰ To put things visually:

Three-stage model of inquiry

1. One is open-minded about how to answer the question Q -----> One is suspended about Q .
2. One is inclined to answer Q via p -----> One hypothesises p .
3. One closes Q -----> One believes p .¹¹

Since hypothesising p does not entail being suspended about some question or believing p , we already know what the functional profile of hypothesis does not look like. The aim of this section is offer a positive characterisation of it.

⁹ I will come back to the issue of which doxastic attitudes are distinctively associated with the third stage of inquiry, i.e. namely the stage at which we close our inquiry, below.

¹⁰ This is a mere terminological choice, and the unhappy reader should feel free to replace it with any label they take to be more suitable than this one. The project I am after in this paper is not to understand how we use the term “hypothesis” in ordinary language, but to offer a characterisation of the state of mind we are in at the second stage of an inquiry such as Lucy’s.

¹¹ Let me emphasise that this is but a simplification. I will indeed suggest that while we typically close our inquiries by (fully) believing a proposition, we can do so in other ways too.

Let us start off with an intuitive gloss on hypothesis: hypothesis is the attitude of being cognitively inclined towards p qua answer to a question.¹² More precisely, the cognitive mechanisms which regulate the formation, revision and retention of hypothesis are directed towards an aim or function which can be put as follows:

(H-AIM)

One hypothesises that p only if one treats p as true for the sake of closing one's inquiry into Q via p .

It's helpful here to contrast (H-AIM) with (B-AIM). (B-AIM) tells us that a belief that p is satisfied, namely it performs its function in our mental economy, only if p is true. P 's truth, however, is not needed in order for a hypothesis that p to perform its cognitive function. Moreover, (H-AIM) marks a difference in mode and content between suspended judgement and hypothesis. Accepting Friedman's definition of the former, we have that suspended judgement is a doxastic attitude of epistemic neutrality towards a question. According to (H-AIM), however, hypothesis is a doxastic attitude of inclination towards a proposition qua answer to a question. So, hypothesis is a non-neutral and propositional doxastic attitude. Consequently, (H-AIM) involves different dispositions from those we associate with suspended judgement and belief. Let me illustrate them.

To begin with, we should identify a set of *focused inquisitive* dispositions, namely behavioural dispositions which are stereotypically associated with being inclined towards a proposition qua answer to a question which is still being investigated. When one hypothesises that p , one is disposed to make more effort in checking whether the information and evidence

¹² The reader will have by now started to wonder whether hypothesising that p reduces to (or entails) assigning a not-so-high credence to p . I will address this issue in section 4.

one has so far collected supports closing Q via p rather than doing the same checking with respect to other candidate answers; one is disposed to explain away recalcitrant pieces of evidence, as opposed to take them at face value and fall short of retaining p ; one is disposed to make sure that p (rather than other candidate answers) coheres with other relevant well-established Q-related truths. Notice the presence of focused inquisitive dispositions marks a difference between hypothesis and suspended judgement. Take for instance the disposition to explain away recalcitrant pieces of evidence as opposed to take them at face value. Certainly, this disposition is not associated with the attitude of being suspended about the question of whether p is true or justified: if one is epistemically neutral about whether p is true or false (or justified/unjustified), one is not going to explain away evidence against p 's truth.

Let me now point towards a positive characterisation of the central verbal disposition we can associate with hypothesising. The comparison with belief is once again helpful, in that I contend that when one hypothesises that p one is disposed to *conjecture*, as opposed to assert, p . Let me explain. Since Searle (1976), it is customary to distinguish various classes of speech acts. For instance, we distinguish between so-called *representatives* (which have a words-to-world direction of fit) and *directives* (which have a world-to-words direction of fit). Representative speech acts, in turn, come in varieties. Searle and Vanderveken (1985: 187) argue that *conjecturing* differs from *asserting* and *guessing*. They write: “to conjecture that P is to weakly assert that P while presupposing that one has at least some slight evidence for P”. This clearly differs from asserting p , but it also differs from guessing p , in that conjecturing requires at least some evidence whereas guessing “can just be an unfounded stab in the dark” (*ibid.*). Turri (2010) elaborates on similar ideas by identifying a class of what he calls *alethic speech acts*, such as asserting, guessing, conjecturing, swearing, and so on. Turri proposes to type-individuate them by looking at the amount of credibility required of one in order for one to appropriately perform the relevant speech act. Plausibly, guessing requires less credibility

than conjecturing, conjecturing requires less credibility than asserting, swearing requires more credibility than asserting, and so on. Surely, more could be said about the type of speech act we can associate with hypothesis, but responsibility dictates to take up this question in a separate investigation. I nevertheless believe that the foregoing gives us enough of a grip on how we might characterise the central verbal disposition involved in hypothesising p .

Moreover, as Lucy's case shows, when one hypothesises p one is not disposed to use p in any kind of practical and theoretical reasoning. Rather, one is disposed to rely on p both theoretically and practically as long as doing so is a way to inquire into a question p is taken to be an answer to. To illustrate this with Lucy's case: Lucy uses p_f as a premise in (theoretical and practical) reasoning about how to construct a new experiment about the biological phenomenon F she is inquiring into. So, hypothesising p involves a disposition to use p in inquisitive practical and theoretical reasoning, that is, in reasoning which is meant to establish whether p is indeed the answer to the question one is inquiring into.

I have offered a sketch of the functional profile of hypothesis. I would like to bring out three noteworthy features of this sketch. First, my characterisation of the functional profile of hypothesis is not saddled with the Unity of Inquiry Problem. Take Lucy's case. At the first stage, she is suspended about FQ . At the second stage, she hypothesises p_f which, per (H-AIM), just means that she is cognitively inclined toward p_f *qua answer to FQ*. Since FQ figures in the specification of the attitudes Lucy entertains at both the first and the second stage of inquiry, in that FQ is the *content* of the attitude she holds at the first stage of her inquiry and FQ figures in the specification of the *mode* of the attitude she holds at the second stage, the Unity of Inquiry Problem does not arise.

Secondly, one might notice that the characterisation of hypothesis on offer is such that it excludes that one hypothesises that p when one has no cognitive inclination towards p . To put the same point differently, my view of hypothesis excludes that one hypothesises that p even

if one takes its negation to be the best way of answering Q. Yet, one might ask: “Why cannot you hypothesise that p if you don’t take p to be the answer to Q? More to the point: why cannot you hypothesise that p if your aim is to show that p is false and does not answer Q?”.

I certainly acknowledge the existence of cases where entertaining a proposition we regard as false might be conducive to closing the question at issue. An even more interesting case is the one in which we entertain p with the aim of showing that p is false. A straightforward example is that of *reductio* arguments. Suppose we are inquiring into the question whether p is true, and we are cognitively inclined towards not- p . Thus, we hypothesise not- p . In a *reductio* argument, we start off with taking p to be true and then show that doing so, together with other seemingly plausible assumptions and rules of inference, leads to a contradiction. However, when we take p to be true at the first step of a *reductio*, we do not do so since we aim at closing the inquiry into p ’s truth-value *in the affirmative*; quite the opposite! Crucially, when one entertains a proposition at the first step of a *reductio* argument, one does so exactly because one thinks (and perhaps has reasons to think) that there are reasons in favour of its negation. So, I submit that the mental state we are in while being at the first step of a *reductio* is a functionally different state from what I have been calling ‘hypothesis’. We might instead say that we *suppose* a proposition for *reductio*. Thus, on my view, the inquirer who takes a given question to be open can both suppose not- p for *reductio* purposes while, at the same time, hypothesising that p . This strikes me as a plausible and natural consequence of the view on offer.

Finally, let me comment on an alternative way of spelling out the functional profile of the doxastic attitude of cognitive inclination we entertain at the second stage of inquiry by looking at what Fleisher (2018) calls “rational endorsement.” Here is his definition (2018: 2652):

S endorses p in a research domain d only if:

1. S is disposed to assert that p , or otherwise express commitment to p (in d).
2. S takes herself to be obligated to defend p (in d).
3. S treats p as a premise in her further reasoning (in d).
4. S shapes her research program in d (in part) based on p .
5. S is resiliently committed to p (in d).
6. S takes p to be a live option (i.e., she does not know p is false).
7. In endorsing p , S aims to promote healthy inquiry.

There are several similarities and dissimilarities between my hypothesis and Fleisher's endorsement which would deserve to be examined carefully. For the time being, however, I will rest content with emphasising what I take to be the major difference between hypothesis and endorsement. Endorsement is explicitly restricted to propositions one entertains in research domains. Indeed, one of the necessary conditions for endorsing p is that one shape one's research program in a domain (in part) based on p . By contrast, I take it that one can be at the second stage of inquiry irrespective of whether one is pursuing a given theoretical program in a research domain. Recall the inquiring into the author and title of a philosophy article example offered in the introduction, in which I am trying to find a paper about normative requirements I only vaguely recall. I might clearly hypothesise that it's got "normative" in the title and its author is John Broome and start inquiring into this accordingly. Unless we end up constructing research domains and programs in a very liberal – and rather implausible – way, it follows that Fleisher's endorsement cannot be an account of the state of mind I am in when I am inclined towards taking the proposition that John Broome is the author of a given article on normative requirements to be the answer to my normativity article question. So, my characterisation of hypothesis does seem to be wide enough as to make

sense of the vast array of cases in which we are cognitively inclined towards a given answer to a question.

Summing up the discussion pursued so far:

Suspended judgement: Question-directed attitude of epistemic neutrality. It involves inquisitive dispositions, and it's typically associated with the first stage of inquiry.

Belief: Propositional attitude. It involves a disposition to unqualifiedly assert the entertained proposition and to use it unrestrictedly in theoretical and practical reasoning. Its function is to be true, and it's typically associated with the ending stage of inquiry at which we settle on a given answer to a question.

Hypothesis: Propositional attitude of cognitive inclination. It involves *focused* inquisitive dispositions, a disposition to conjecture the relevant proposition and to use it restrictedly in inquisitive theoretical and practical reasoning. Its function is to enable us to pursue our inquiries by focusing on a specific way to answer a question, and it's typically associated with the second stage of inquiry.

3 The normative profile of hypothesis

This section takes up the question of what the normative profile of hypothesis is. A normative profile is to be understood minimally as issuing a set of prescriptive standards. This minimalism is all for the good, allowing us to find common ground between those theorists holding that we should type-individuate doxastic attitudes exclusively on functional grounds,

and those theorists maintaining that type-individuation of doxastic attitudes depends solely on the specification of their constitutive norms (see McHugh and Whiting 2014 for an overview and further references). The delicate question of how we should type-individuate doxastic attitudes is orthogonal to the project I am after in this paper, for the existence of a doxastic attitude of cognitive inclination should be acknowledged irrespective of whether we are functionalists or normativists about doxastic attitudes. So, I invite exclusive functionalists to take the discussion that follows as bringing out a set of regulative norms for hypothesis that do not help determine its essence which, according to their taste, will have to be regarded as fully spelled out by my previous observations about its functional profile. I also invite exclusive normativists to regard my discussion of the norm of hypothesis that will follow momentarily as revealing what's constitutively distinctive about such an attitude. Finally, I invite those sympathetic to a third way approach to type-individuation to the effect that norms type-individuate different attitudes *together with* their content and functional profiles to think of the normative profile of hypothesis as established by looking at the aim or function of such an attitude and as partly individuating of it.

Having clarified this, let me start off with tackling the question of the normative profile of hypothesis by focusing on the relation between knowledge and inquiry. Friedman (2017: 312) observes that “inquiring while knowing is somehow epistemically impermissible or inappropriate”. She then subscribes to what I shall call the *Requirement Not to Inquire while Knowing Principle* saying that if one knows that p answers Q at t ,¹³ then one ought not be in an inquiring state of mind towards Q at t . To abbreviate it formally:

RN_{IK}: $Kp \rightarrow O\neg Ip$.

¹³ Friedman (2017: 311) calls it “Ignorance Norm”. Throughout the paper, I will take the ‘ p answers Q ’ expression to refer to p being a *complete* answer to Q .

On reflection, though, **RN_{IK}** is too strong. When one knows the answer to a question, one is clearly epistemically permitted to no longer inquire into that question, in that knowledge is, undoubtedly, an epistemically valuable state to reach while inquiring into some matter. This, however, is altogether compatible with the pursuit of a Cartesian-sounding infallibilist inquisitive project wherein one does not bring the inquiry into a question to a close unless one reaches objective certainty about the matter at issue. Surely, given the prominence of the fallibilist framework in epistemology, inquirers are under no epistemic obligation to pursue infallibilist projects. However, from **RN_{IK}** it follows that inquirers are under the obligation not to pursue such projects. Yet, such an epistemic ban on infallibilist projects strikes me as unprincipled: from the fact that one is not required to do something it doesn't follow that one is required not to do it.¹⁴ Thus, I propose to characterise the central relation between

¹⁴ One might wonder whether Friedman takes **RN_{IK}** to be a wide-scope, as opposed to a narrow-scope, principle. If so, the epistemic obligation not to inquire takes scope over the whole conditional and the consequent cannot be “detached”, thereby avoiding the objection to **RN_{IK}** I have just stated. Two observations are in order. First, Friedman (2017: 323 fn. 19) explicitly says that the principle receives a narrow-scope reading, but that a wide-scope one is also acceptable. So, I do not take myself to be begging the question against her formulation of the principle. Secondly, and more importantly, I think that we should resist formulating **RN_{IK}** (and cognate principles) as wide-scope norms. Wide-scope norms are widely (although not universally) taken to express *requirements of rationality*, where such requirements are meant to target certain ways of structuring one's mind by preventing certain combinations of attitudes. Friedman (2017: 311-2) seems to be thinking of **RN_{IK}** in these terms. However, **RN_{IK}** crucially differs from run-of-the-mill rational requirements – consider the idea rationality requires of you that if you believe *p*, you do not believe not-*p* – in that it does not merely prevent certain combinations of attitudes. Irrespective of whether **RN_{IK}** is formulated in a wide- or narrow-scope way, the antecedent of **RN_{IK}** is a *known proposition*, and not a merely believed one. This asymmetry cannot be ignored and, to my mind, suggests that principles such as **RN_{IK}** are to be seen as substantive prescriptions of reason, as opposed to structural prescriptions of rationality. I thank an anonymous referee for pressing me on this matter.

knowledge and the states of mind we are in while inquiring into some matter via the following *Permission Not to Inquire while Knowing Principle*:

PN_{IK}: $Kp \rightarrow P\neg Ip$.

PN_{IK} is an admittedly weak principle. One might even contest that since **PN_{IK}** does not tell us when we are epistemically required to inquire into some matter, it is a rather unhelpful principle. I disagree. For one thing, I doubt that an answer to the question of when we are epistemically required to inquire into some matter is easily available. To bring out the complexity of the issue at hand, let us accept the widespread idea that knowledge is the aim of inquiry. Clearly, we cannot simply say that we are epistemically required to inquire into all the questions to which we do not know the answer, for that would lead us straight into requiring us to know a lot of uninteresting and insignificant truths, thereby raising traditional philosophical eyebrows about the value of knowledge. As I see it, the question of whether or not we are epistemically required to inquire into some matters rather than others gets as deep and delicate as the question of what the sources of epistemic normativity are. Hence, just like epistemic norms might in the end be grounded into something which is not distinctively epistemic, there might be no distinctively epistemic – as opposed to, say, practical – requirement to investigate into some matter. To my mind, **PN_{IK}** should not take a beating for being silent on this issue. For another, **PN_{IK}**'s weakness should not be confused with un informativeness. The principle does tell us something about the relation between knowledge and inquiry, in that it tells us that if you ought to be in an inquiring state of mind towards Q, then you don't know the answer to Q.¹⁵ This places a constraint on the normative

¹⁵ To see why, let us assume **PN_{IK}**. By contraposition, standard definition of **P** as $\neg\mathbf{O}\neg$, and double-negation elimination, we have: $\mathbf{O}p \rightarrow \neg Kp$.

profile of the doxastic attitudes we entertain while inquiring into some matter to which I will come back below.

Mindful of PN_{IK} , let us approach the question of the normative profile of hypothesis by briefly looking at when one is rationally permitted to suspend judgement and believe. Since suspended judgement's aim is to direct the mind towards a given question to be inquired into, and since Friedman (2017: 321) notices that there is nothing wrong with starting an inquiry into Q just out of curiosity, for pragmatic or moral reasons, we can say that one is epistemically permitted to suspend judgement in a wide range of circumstances. Let us turn now to belief and consider the following:

B: For all p , one is permitted to believe that p if and only if p .

As is well-known, **B** is far from uncontroversial.¹⁶ Yet, since it is one of the plausible ways whereby the normative profile of belief has been cashed out in the literature, I will use it for the sake of illustrating the normative profile of hypothesis by contrasting it with that of suspended judgement and belief. I submit that permissible hypothesis is governed by the following norm:

H: For all p , one is permitted to hypothesise that p if and only if entertaining p enables one to make reliable progress with the inquiry into p being the answer to Q .

¹⁶ See e.g. Whiting (2010) for a defence. Some of the complexities I will gloss over are: First, some would contend that the best formulation of **B** is in terms of an obligation rather than a permission. Secondly, while I am using truth as the relevant normative property, **B** could be reformulated in terms of knowledge (see e.g. Williamson 2000) without affecting the main points of the present discussion. Thirdly, we can make **B** compatible with an evidentialist view to the effect that it is epistemically appropriate to rely on evidential considerations when engaged in doxastic deliberation (See e.g. Shah and Velleman 2005).

The right-to-left side of **H** says that if entertaining p enables us to make reliable progress with the inquiry into p being the answer to Q , we may hypothesise p . The left-to-right side of **H** says that if entertaining p as true is not conducive to making reliable progress into discovering whether or not p is the answer to Q , then we ought not to hypothesise p .

A couple of preliminary clarifications are in order. First, **H** does not require that one believe that progress will be made. Hence, if somebody thinks that no progress toward the truth of a given question – say, the question of whether or not there is free will – can ever be made but is still cognitively inclined towards compatibilism is not *ipso facto* an irrational hypothesiser. Conversely, it is not enough to believe that entertaining p will bring about (reliable) progress with the inquiry into p 's being the answer to Q in order for one to be a rational hypothesiser. Secondly, imposing the condition that the progress be *reliable* is meant to rule as irrational those inquirers who make progress with the inquiry into p being the answer to Q by sheer luck through motivated reasoning, confirmation bias, and similarly vicious reasoning methods. The rough idea here is that while abduction, deduction, induction are reliable reasoning methods, motivated reasoning and confirmation bias are not. For present purposes I do not have to work out exactly why this is so. Thus, in order to fully specify the content of **H** one should feed into it one's favourite way of tracing the distinction between reliable and unreliable reasoning methods and expect that it return the intuitively correct verdicts about the impermissibility of hypothesising in the aforementioned vicious cases.

I have so far operated under the assumption that **H** is a squarely epistemic norm. This, however, can't be assumed without argument. So, let me say something by way of defence of the epistemic nature of **H**.

H is a squarely epistemic norm even if making reliable progress with the inquiry into p being the answer to Q is not a reliable indicator/evidence of, nor is it a necessary condition for, nor makes it more accurate that p is the answer to Q . This means that rational hypothesis, unlike rational belief (see **B**), is not constrained by truth. However, rational hypothesis does promote truth (and knowledge) in the long run in a variety of ways. To illustrate, take Lucy's case again: by hypothesising p_f , she starts designing experiments whose goal is to test p_f (as opposed to other candidate answers to FQ), she starts checking the coherence of p_f with other established truths in biology, and so on. If the new experiments decisively speak against p_f and such data can't be easily explained away, and if p_f is inconsistent with one of the uncontested truths of cell biology, this strongly suggests that p_f does not answer FQ . Hence, the fact that Lucy has hypothesised p_f has been conducive to the goal of minimising falsehood and error.

To systematise these considerations, let us avail ourselves of the helpful distinction made by Fleisher (2018) between *intrinsic* and *extrinsic* epistemic reasons (or values) (See also Steel 2010). The basic idea is that epistemic reasons are intrinsic only if they are necessary for, or reliable indicators/evidence of truth. Hence, adopting **B**, p 's truth gives one an intrinsic epistemic reason to believe it. By contrast, epistemic reasons are extrinsic if they promote truth (and knowledge) without bearing any tight, be it evidential, probabilistic, causal, necessary, or what have you, link to truth or knowledge. **H** can therefore be seen as telling us which extrinsic epistemic considerations make one rationally permitted to hypothesise p .

Importantly, **H** returns the desirable verdict about what Fleisher (2018) calls "sandwich reasons" to the effect that pragmatic reasons aimed at epistemic ends are not genuinely epistemic. Here is the case Fleisher has in mind. Suppose that eating a sandwich promotes truth in the long run in that it leads to better intellectual performance. Suppose that if Lucy

hypothesises p_f she'll end up working in a lab near a good sandwich shop. Does Lucy have an epistemic reason to hypothesise p_f ? Intuitively, the question should be answered in the negative. Fleisher (2018) suggests that extrinsic epistemic reasons are internal to domains of inquiry, and each domain of inquiry imposes its own standards for promoting epistemic ends. Hence, in the sandwich scenario Lucy does not count as having an extrinsic epistemic reason to hypothesise p_f since eating sandwiches to improve one's cognitive performance is not one of the standards of inquiry for attaining biological truth and knowledge. By contrast, testing one's hypothesis against experimental data, as well as checking its coherence with well-established truths in that domain can be plausibly seen as standards of inquiry within biology. **H** happily takes on board Fleisher's distinction between extrinsic epistemic reasons and pragmatic reasons, in that regarding p_f as true amounts to a permissible hypothesis *only if* doing so brings about progress with *the inquiry* into p_f being the answer Q. So, the reasons that make one's hypothesis that p permissible are inquiry-relative.

I would like now to delve a little more into the content of **H** by focusing on the requirement of making progress with the inquiry (let's forget about the reliability condition, since it won't be relevant to what follows). One might wonder: "Why is one not permitted to hypothesise p in an inquiry in which one is a position to know that, given the available information, progress will never be made?".

To address this issue, it might help having in mind an example of an inquiry into a question about which we know that progress will never be made. Suppose you focus on Cantor's continuum hypothesis by asking the following: *assuming the standard Zermelo-Fraenkel axiomatization of set theory (plus the axiom of choice, call this ZFC), is there an infinite set of real numbers which could not be put into one-to-one correspondence with either the integers or the real numbers?* As is well-known, the independence results proved by Cohen and Gödel show that we can't answer this question on the basis of ZFC axioms. So, we

are now in a position to know that we cannot make any progress – understood in terms of coming up with a yes/no answer – into the question of whether or not the continuum hypothesis holds within ZFC. Suppose that we keep on inquiring into this question and one tells us: ‘You should stop focusing on whether the continuum hypothesis is true within ZFC, you know that there’s no way of proving that!’. This ascription of blame seems perfectly legitimate. The necessary condition on permissible hypothesis imposed by **H** captures this verdict.

On closer inspection, the legitimacy of such ascription of blame can be theoretically supported by a principle linking the permissibility of inquiry to the notion of *being in a position to know*.¹⁷ First, recall that in defending **PN_{IK}** I have deployed the idea that knowledge is a valuable epistemic good to attain while inquiring into some matter. That is, if one gets to know the answer to a question, one can rationally take one’s inquiry into that question as satisfied and move on. Now, if **PN_{IK}** tells you that you are rationally permitted to stop inquiring into Q if you know that *p* answers Q, this means that it might be possible for you to achieve knowledge of the answer to Q, e.g. *p* or not-*p*, in the first place. So, the following principles, call them *Permission to Inquire and Possibility of Being in a Position to Know Principles*, hold (let “**k**” be the *being in a position to know* operator):

PI_{PK1}: $\mathbf{P}I p \rightarrow \Diamond \mathbf{k} p$.

PI_{PK2}: $\mathbf{P}I \neg p \rightarrow \Diamond \mathbf{k} \neg p$.

¹⁷ Being in a position to know *p* and knowing *p* differ in that the condition that one believe *p* in the latter is replaced by the condition that one be physically and psychologically capable of believing *p* in the former (see Williamson 2000). It follows that being in a position to know, just like knowing, is factive.

With these two principles in place, we can show that the claim that one is permitted to inquire into the question of the truth-value of a proposition and the claim that one is in a position to know that one cannot be in a position to know that the proposition cannot be held together.

The argument goes as follows:

- | | |
|--|--|
| (1) $\mathbf{k}\Box\neg\mathbf{k}p$ | (Ass) |
| (2) $\mathbf{k}\Box\neg\mathbf{k}\neg p$ | (Ass) |
| (3) $\mathbf{PI}p \vee \mathbf{PI}\neg p$ | (Ass) |
| (4) $\mathbf{PI}p$ | (Ass) |
| (5) $\Box\neg\mathbf{k}p$ | (1, factivity of \mathbf{k}) |
| (6) $\neg\Box\neg\mathbf{k}p$ | (4, \mathbf{PI}_{PK1} , definition of \Box , and MP) |
| (7) $\mathbf{PI}\neg p$ | (3, 5, 6, RAA) |
| (8) $\Box\neg\mathbf{k}\neg p$ | (2, factivity of \mathbf{k}) |
| (9) $\neg\Box\neg\mathbf{k}\neg p$ | (7, \mathbf{PI}_{PK2} , definition of \Box , and MP) |
| (10) \perp | (8, 9) |
| (11) $\neg(\mathbf{PI}p \vee \mathbf{PI}\neg p)$ | (3, 10, RAA) |

This strengthens the contention that hypothesising that p in a permissible way requires that regarding p as true enable one to make progress with the inquiry into p 's being the answer to Q .

At this stage, though, a natural question arises: "If one is not permitted to hypothesise in such cases, what's the correct thing to do?". Let me gesture towards what I take to be the right answer. The stance we are permitted to take towards a question such as whether or not the continuum hypothesis holds within ZFC is an attitude of neutrality standing for the epistemic inability of closing the question in the affirmative or negative way. Rosenkranz (2007) offers a characterisation of this kind of epistemic neutrality he dubs "True Agnosticism". True Agnosticism is the stance we adopt when we are not in a position to know the truth-value of a proposition and will continue not to know it relative to all states of information we can reach

by expanding current methods of inquiry and cognitive powers. It is an interesting question how the agnostic stance described by Rosenkranz and the attitude of suspended judgement described by Friedman relate to one another. Such a question would deserve a careful examination that is better postponed to a separate investigation. However, the following seems plausible: epistemic neutrality comes in two varieties. We can have both an *open-minded*, as it were, attitude of epistemic neutrality which is captured by Friedman's suspended judgement; and a *closed-minded*, as it were, attitude of epistemic neutrality which is captured by Rosenkranz's agnostic stance. The important point, to my mind, is that Rosenkranz's agnosticism is a stance we adopt to close inquiries into certain questions in an epistemically neutral way, whereas Friedman's suspended judgement is the attitude we hold to open inquiries.

Summing up: sections 2 and 3 jointly support the conclusion that suspended judgement and belief are not of the right functional and normative currency to be entailed by or identical to hypothesis. I have accordingly characterised hypothesis by distinguishing it, both functionally and normatively, from suspended judgement and belief. However, one might ask: "Can't hypothesis be reduced to other familiar doxastic attitudes than (full) belief, suspended judgement, or supposition?". The next section addresses this question.

4 Hypothesis as a *sui generis* doxastic attitude

In this section I will look at three possible ways of reducing hypothesis to other doxastic attitudes and raise problems for each of them. This, together with the previous characterisation of the functional and normative profile of hypothesis, should lead us to conclude that hypothesis is a distinctive type of doxastic attitude.

Let me start off with the idea that since hypothesising that p stands for a more tentative cognitive attitude towards p than fully believing that p , we can take hypothesis to reduce to holding a certain credence, or set of credences, in p .¹⁸ Attractive though it might be, I believe that this view should be resisted, for two different kinds of considerations. The first kind is a collection of worries one has to face while characterising the relation between outright belief and credences and holding, at the same time, that the attitude of hypothesis reduces to credences. The second kind relies on the idea that credences can be attitudes whereby we close our inquiries.

As is well-known, there is much debate on how outright belief and partial belief are related to one another. So, in order to properly evaluate the prospects of reducing hypothesis to credences, we should also consider how such a reductionist view interacts with the various positions one might take vis-à-vis the relation between full and partial belief. A careful assessment of the various positions advanced in this debate cannot be pursued here, so I will restrict my attention to what are, arguably, the two main competitors; (1) the *nonreductionist pluralist* approach defending the psychological and epistemological legitimacy of both outright and partial belief; (2) The *reductionist* approach to the effect that the former reduces to the latter.

Let us take (1) first. The nonreductionist pluralist who would seek to reduce the attitude of hypothesis has to answer the question: which credences? The pluralist had better not take the whole $[0, 1]$ interval as the reductive base. It is indeed important to bear in mind that what is distinctive of the attitude of hypothesis is that it stands for the individual's taking p to be the most promising answer to Q . Yet, it is implausible to maintain that a very weak partial

¹⁸ My considerations against the credal reductionist approach are meant to hold for both mushy and sharp options.

belief, e.g. .1 credence in p , captures the *qualitative* aspect of being inclined to p qua the way of closing the inquiry into Q .

To fix this wrinkle, the pluralist can maintain that hypothesis is to be reduced to a suitably defined set of high credences. At this point, however, the pluralist has to answer two questions concerning the way the reduction is actually carried out. The first is to specify the reductive base in a non-arbitrary way. The second is to explain what the cognitive role of low and middle credences is, given that – within the pluralist nonreductionist framework under scrutiny – they do not serve as candidate reductions for attitudes of disbelief and suspended judgement. This cognitive gap needs to be filled, and it is not obvious how the pluralist is going to do that.

Let us turn now to the reductionist option and consider a proposal in accordance with the so-called *Lockean Thesis*.¹⁹ The Lockean Thesis offers a threshold-based reductionist approach to (rational) outright belief. First, the Lockean takes the whole $[0, 1]$ interval to be the reductive base for the classical tripartite distinction between disbelief, suspended judgement, and belief. Secondly, the Lockean maintains that full belief is identical to sufficiently strong (but not necessarily 1) credence, and disbelief is identical to sufficiently weak (but not necessarily 0) credence. Now, since having low credence in p is guaranteed to be the equivalent to having high credence in $\text{not-}p$, and disbelieving p will be the same as believing $\text{not-}p$, we could just add a section for hypothesising on both sides of suspension, one for hypothesising p and another for hypothesising $\text{not-}p$. On the face of it, then, the Lockean-reductionist could make descriptive sense of the attitude of hypothesis. Yet, it must be flagged that Lockean-reductionism is far from conclusively established. So, reducing the attitude of hypothesis to credences carries a far from ecumenical commitment to Lockean-reductionism.

¹⁹ See Christensen (2004), Foley (1993), Sturgeon (2008).

That being said, though, I believe that we also have epistemological – as opposed to merely psychological – reasons not to reduce the attitude of hypothesis to credences. The key epistemological consideration here is that credences can be (and sometimes are) attitudes whereby we close inquiries and can constitute knowledge.

Let me firstly introduce this idea on intuitive grounds. Suppose one opens the question of whether Alice is eating cheese for lunch. If one has taken into account the total body of evidence bearing on the question, the evidence is such that there's a 70% chance that Alice is eating cheese for lunch, and one's credence in the proposition that Alice is eating cheese for lunch matches that chance, then it seems that – relative to that body of evidence – one is permitted to stop inquiring into the question by being .7 confident in the truth of the proposition *that Alice is eating cheese for lunch*. This suggests that the very idea of closing one's inquiry into a question need not be factive. Rather, one closes one's inquiry relative to one's own epistemic position: if one's body of evidence is such that – defeasibly and perhaps misleadingly – it tells that there's a 70% chance that Alice is eating cheese for lunch, it seems that one can close one's inquiry into the question of what Alice is eating for lunch by being .7 confident that she's eating cheese. Should one acquire new countervailing evidence, one (if rational) would re-open the question, weigh in the new evidence, and revise one's credence accordingly (if needed).

To sharpen this point, let us avail ourselves of the idea that even if credences can't be true or false, they can be more or less close to the truth. That is, they can be more or less accurate. We can calculate the accuracy of credences via a *scoring rule*, namely a formula that enables us to calculate the accuracy of a credence in p by measuring how far it is from the truth-value p would have in the actual world w . More precisely, for any proposition p , credence Cr , and truth-value v , a scoring rule assigns a real number ≥ 0 which measures the accuracy of holding Cr when the truth-value of p in w is as given in v . Now, when one is not

sure about whether a given p is true, one can derive the *expected accuracy* of one's credence relative to one's probability function. The expected accuracy of a credence is the average of the accuracy scores the credence would get in cases where p is true and in cases where it is false, weighted by the probability that the state of the world in which p is true and the state of the world in which p is false obtain.

Let us now consider the following principle, clearly identified for the first time by Sophie Horowitz (2014: 43):

Immodesty: The credences recommended by your own epistemic rule, given a body of evidence, should uniquely maximise expected accuracy for you.

Horowitz defends **Immodesty** in its full generality. Her main idea is that it would be irrational to regard some epistemic rule, namely a function from a body of evidence to doxastic states which the agent takes to be truth-conducive, as more truth-conducive than one's own, but not adopt it. **Immodesty** is frequently appealed to by Bayesians. Joyce (1998) maintains that if you have coherent credences then you will be immodest. Greaves and Wallace (2006) use something like **Immodesty** to argue that conditionalisation maximises expected accuracy. Hence, **Immodesty** is a widely held principle.

Now, in light of **Immodesty**, we can reason as follows: if you should regard your credence in p as maximising expected accuracy, then you are rationally permitted to take the question whether p to be settled. The driving thought behind this is that given that our epistemic position seldom affords us certainty about whether a given p is true, it seems that having credences which maximise expected accuracy is a good thing. Actually, that's as rational as we will get insofar as we are trying to match our credences to how things are in the world relative to our own epistemic position. Hence, when one's credence in p maximises

expected accuracy, one is rationally permitted to take the question whether p to be settled by being $.n$ confident that p is the case.

The foregoing observations show that we can rationally close our inquiries into the question of p 's truth-value by holding a certain credence in p 's truth. A fortiori, we can close our inquiries into p 's truth-value by holding credences. Moreover, the idea that we can close inquiries via credences receives independent support from the contention, recently defended by Konek (2016) and Moss (2013) (2018), that credences can constitute knowledge just like outright belief. If this is right, and if we plausibly maintain that knowing the answer to a question is a way of closing the inquiry into it, then we have additional reason to believe that credences are attitudes whereby we close inquiries.

I regard the foregoing considerations as raising the following challenge: if one wanted to maintain that credences are attitudes we can entertain both when the inquiry is open and when it is closed, what does it make the case that they can play such a double-duty, given that such duties, as it were, have significant functional and normative differences? Which credences do we (and are appropriate to) have at the second stage? And which ones are compatible with knowledge and closing the inquiry? Insofar as we do not get a principled answer to these questions, I think that we have a *prima facie* reason to avoid reducing hypothesis to credences.

I have raised some challenges against the credence-based reductionist approach to hypothesis which add up, it seems to me, to a cumulative argument against such a reductionist strategy. Let us turn now to a *metacognitive* reductionist strategy maintaining that the attitude held at the second stage of inquiry reduces to some belief about the epistemic status of p . Potential candidates are: the belief *that p has so far more justification than r has*; the belief *that p is more likely to be true than r* ; the belief *that the evidence supports p more than r* . I

submit that such an approach is vulnerable to counterexamples.²⁰ I will construct one such counterexample by focusing on the idea that hypothesis entails the belief that p has so far more justification than r has, but the pattern of counterexample carries over to the other potential candidates listed above.

Let us consider inquisitive enterprises featuring *hyperintellectualised inquirers*. A hyperintellectualised inquirer is somebody who hypothesises that p , is aware of why she's doing so, and holds certain views about what justification is such that they exclude that she is hypothesising that p since she takes p to have so far more justification than r . For instance, one can take p to be the way to answer Q since that answer to Q fits better with other answers one gives to related questions T, V, Z. Moreover, one is also aware that one believes that coherence is not a justification-conferring property. In this case, the fact that one takes p to be the most promising way to answer Q does not entail that one believes that p is more justified than r . This would not amount to taking p more justified than r is, for one does not subscribe to a coherentist theory of justification.

Cases of hyperintellectualised inquirers are such that one hypothesises that p without committing oneself to any stance about p 's epistemic pedigree. Such cases seem possible. Hence, being at the second stage of inquiry does not entail having a belief about the epistemic status of the answer we are cognitively inclined towards.

Finally, one might think that the attitude of hypothesis reduces to what many philosophers call "acceptance". Yet, different philosophers mean different things by "acceptance". I will now consider three prominent accounts of acceptance and show that the attitude of hypothesis crucially differs from each of them.

²⁰ Goldberg's definition of what he calls "attitudinal speculation" is an instance of such metacognitive accounts (see Goldberg 2013: 283).

First, Cohen (1992) defines acceptance that p (call it C-acceptance) as having or adopting a policy of deeming, positing, or postulating that p , using p in practical and theoretical reasoning, independently of whether one “feels it to be true that p ” (Cohen 1992: 4). C-acceptance can’t be the attitude of hypothesis, though, for the latter comes with a cognitive inclination towards the entertained proposition whereas the former doesn’t, in that one can accept that p “whether or not one feels it to be true that p ”.

Secondly, Stalnaker (1984: 79-81) claims that to accept a proposition is to treat it as true and to ignore (for some reason and at least temporarily) that it is false (call this S-acceptance). In Stalnaker’s picture, “acceptance” is an umbrella term whereby we refer to all cognitive propositional attitudes, such as belief, supposition, imagination, and so on. Thus, when we believe p we thereby S-accepts p , when we imagine p we thereby S-accepts it, and so on. Thus, while S-acceptance is such that hypothesising p entails S-accepting it, this is a rather moot point in the context of the present discussion.

Thirdly, Van Fraassen (1980: 12) speaks of acceptance (call it V-acceptance) of a scientific theory as involving both a belief that the theory is empirically adequate and a pragmatic commitment consisting, for the scientists, in the adoption of a particular research program, and for everyone, in the disposition to use the theory in giving explanations and answering questions *ex cathedra*. Even granting the non-trivial extension of the notion of V-acceptance to any sort of proposition (and not just to a set of propositions constituting a scientific theory), V-acceptance and hypothesis crucially differ in two respects. First, the latter doesn’t entail a belief that the relevant proposition is empirically adequate. Secondly, and more importantly, V-acceptance is meant to play the role played by belief without carrying a commitment to the truth of the V-accepted proposition. Thus, V-acceptance has to be regarded as a way of closing the inquiry into a certain question via a proposition which differs from belief. Yet, as has emerged previously, hypothesis is the attitude we entertain when the

inquiry is still open. So, V-acceptance and hypothesis play two different roles in inquiry.

In this section I have considered and raised objections to attempts at reducing hypothesis to more familiar types of doxastic attitudes, such as a credence (or set of credences) towards p , a belief about the epistemic status of p , an acceptance that p . This, together with the previously established point that hypothesis doesn't reduce to suspended judgement or full belief, entitles us to conclude that hypothesis is a *sui generis* type of doxastic attitude.

5 Summing Up

The states of mind we are in while we are inquiring into some question are functionally characterised by a distinctive sensitivity to answering a question, to be understood in terms of dispositions to gather and assess information and evidence which are conducive to closing the target question. This functional role, I have argued, can be played in more than way, depending on whether one is at a stage of open inquiry in which one is merely in a doxastically neutral state of mind, or whether one is at a later stage of open inquiry in which one is cognitively inclined towards a given answer to a question. I take Friedman's notion of suspended judgement to be an apt characterisation of the doxastic neutrality one exhibits at the first stage of inquiry, whereas I take my characterisation of hypothesis to make sense of the attitude of cognitive inclination one typically entertains at the second stage of inquiry. As far as I can see, both suspended judgement and hypothesis are types of doxastic attitudes which can respect the normative connection between knowing and being in an inquiring state of mind expressed via \mathbf{PN}_{IK} , which reads as follows: $\mathbf{K}p \rightarrow \mathbf{P}\neg Ip$. The view of the inquiring states of mind just presented allows a straightforward derivation of \mathbf{PN}_{IK} by entailment from

the following *Permission not to Suspend Judgement while Knowing Principle* and *Permission not to Hypothesise while Knowing Principle*:

PS_K: $Kp \rightarrow P \neg SQ$.

PH_K: $Kp \rightarrow P \neg Hp$.

The justification for both principles hinges on the contention – already deployed above to justify **PN_{IK}**, **PI_{PK1}**, **PI_{PK2}** – that knowledge is a valuable epistemic condition to reach while inquiring into some matter. If one knows that p (namely, if one knows that p answers Q), then one is certainly no longer required to inquire into Q .

This completes my account of the doxastic attitudes we entertain at open stages of inquiry. However, the foregoing discussion naturally prompts the following questions: “Why suspend judging? And why hypothesise?”. Here I mean to be raising the question of the epistemological import of these two attitudes and of the different stages of inquiry. Since suspended judgement enables us to be epistemically neutral about the question we set out investigate, it seems that we are (epistemically) right in being suspended whenever we open the inquiry into some matter and we don’t have any clue as to how to address it. Friedman elaborates at length on this thought, so I won’t dwell on suspended judgement any further. I will rather offer some considerations on the epistemological significance of hypothesis.

6 The epistemological significance of hypothesis

I will suggest that holding an attitude of hypothesis is the rational thing to do while facing a disagreement with an acknowledged epistemic peer. Furthermore, the appeal to hypothesis offers a suitable development of the idea – originally defended by Philip Kitcher (see e.g.

Kitcher 1993) – that some of our inquisitive enterprises are such that they would benefit epistemically from avoidance of consensus and promotion of cognitive diversity across inquirers.

To begin with, let me emphasise that if the arguments of this paper are sound, we should acknowledge the existence of a new variety doxastic revision: one can revise one's belief that p by turning it into an attitude of hypothesis towards p . I believe that this new variety of doxastic revision provides us with a new and promising solution to the problem of peer disagreement. Let me explain.

So-called *conciliatory views* of peer disagreement maintain that, upon discovering a disagreement with an epistemic peer, one ought to revise one's doxastic state either by suspending judgement or by adjusting one's degree of confidence in light of one's peer's take on the matter at stake. By contrast, so-called *steadfast views* claim that one should not revise one's belief and is epistemically entitled to stick to one's guns. As is well-known, however, conciliatory views have to face the objection of providing a *sceptical* response to the discovery of peer disagreement, while steadfast views have to face the opposite charge of providing a *dogmatic* way of responding to peer disagreement.²¹

The respective sceptical and dogmatic drifts have led many supporters of conciliatory and steadfast views to engage into a process of refinement and amendment of their respective views which, as of today, has not yielded a clear – let alone conclusive – verdict about which view is the correct one. I therefore suggest exploring the prospects for a new view saying that peers are rational in responding to their disagreement by turning their initial doxastic attitudes

²¹ There's an impressive body of literature on peer disagreement (see e.g. the Christensen and Lackey 2013 and Feldman and Warfield 2010 collections).

towards p and not- p into attitudes of hypothesis towards them.²² Let me now highlight three important features of this view.

First, the view enables us to capture the conciliatory intuition that peer disagreement is somehow epistemically significant, for it makes room for some doxastic revision. Importantly, the intuition is preserved without giving rise to a sceptical response to peer disagreement, in that hypothesis and suspended judgement are different doxastic attitudes.

Secondly, and relatedly, the idea that two peers are rational in revising their initial cognitive states by turning them into contrasting hypotheses is compatible with the idea, defended – amongst others – by Christensen (2010) and Lasonen-Aarnio (2014), that the epistemic significance of disagreement lies in bringing forth the doubt that one’s doxastic attitude was never rational to begin with. Disagreement has the distinctive retrospective impact of being evidence that one’s belief was not epistemically supported at the time of its formation, in that it is evidence that one’s belief is the output of a flawed cognitive process (this kind of evidence goes under the name of “higher-order evidence”). On this understanding of the epistemic significance of peer disagreement, it is quite natural to claim that the peers are rational in being in an inquiring state of mind towards the relevant question by re-assessing what the original body of evidence is, how to interpret its probative force, and how to reason from the evidence to a belief.

²² I fully develop this view in Palmira (2019). Similar views have been defended by Goldberg (2013) and Barnett (forthcoming) in connection to philosophical disagreement. Goldberg invokes the aforementioned notion of “attitudinal speculation” in order to make sense of the possibility that two philosophers rationally retain their incompatible philosophical views without retaining a belief in them. Barnett raises some worries about Goldberg’s metacognitive definition of attitudinal speculation and defends a view of the rational response to peer disagreement in philosophy to the effect that one is rationally permitted to have an attitude of “inclination to accept a certain view as true”. Since Barnett does not give us any detail about the functional and normative profile of this attitude, one might wonder whether what I call “hypothesis” is what he has in mind.

Thirdly, the view on offer retains some of the attractiveness of the steadfast intuition to the effect that a complete suspension of judgement would be epistemically spineless in many interesting and controversial cases, such as moral and philosophical disagreements. Revising by hypothesising enables the peers to retain their respective cognitive inclinations towards the truth and falsity of p which would be lost if they had to revise by suspending judgement and becoming open-mindedly neutral about the issue at stake. Since the attitude of hypothesis is held while taking the inquiry into a question to be open, this will enable peers to keep on inquiring into the matter they disagree about without giving up completely their respective views. Thus, the view I recommend vindicates the idea that two peers can rationally sustain their disagreement insofar as their doxastic attitudes towards p and its negation are hypotheses, as opposed to beliefs or credences.

Let me turn now to the second suggestion about the epistemological significance of hypothesis. Philip Kitcher has famously argued that dividing cognitive labour amongst scientists can increase the chance of discovering a significant scientific truth. Suppose that theory T about question Q is 80% likely to be true whereas theory G is only 20% likely to be true (on the available evidence). Clearly, rational standards for individual belief are such that scientists should believe and pursue T while foregoing G. However, Kitcher shows that this is not the most truth-conducive thing to do collectively: T might well be false, and it is more conducive to discovering the truth about Q by letting a group of scientists work on T and a different group of scientists work on the less likely answer T' to Q than by letting the entire scientific community pursuing T.²³

²³ While Kitcher is focusing specifically on scientific inquiries, authors such as Barnett (forthcoming) and Elgin (2010) suggest generalising Kitcher's point by looking at the structural features of various inquisitive scenarios in which fostering cognitive diversity has better epistemic payoffs than promoting consensus amongst inquirers. Noticeably, they take philosophical inquiry to be another domain in which Kitcher's division of cognitive labour can be fruitful.

If we follow Kitcher here, the following problem arises. If – as argued above – beliefs and credences are attitudes whereby we bring inquiries to a close, these cannot be taken the attitudes whose diversity needs to be promoted, for cognitive diversity is meant to be beneficial in the pursuit of truth when inquiries are still open. Relatedly, if inquirers pursue the less likely theory by believing it, they would be regarded as irrational, in that they should have believed the more likely theory. This leaves us with an unwelcome result: from an epistemic perspective inquirers would be collectively rational but individually irrational.

Suspended judgement won't do either: even if it is an attitude we can entertain while inquiring, it clearly fails to promote cognitive diversity. I therefore conjecture that the attitude hypothesis is the type of cognition that can be diversified while taking inquiries to be still open. That is to say, by entertaining different hypotheses about Q, inquirers can sincerely advocate and defend their different views on the matter they are investigating and bring about the epistemic benefits of cognitive diversity. Moreover, by hypothesising – as opposed to believing – less likely candidate answers to given questions, inquirers would not count as epistemically irrational, in that permissible hypothesis is not governed by truth-constrained norms. This would allow us to preserve the rationality of inquirers at both the collective and individual level.²⁴

²⁴ Fleisher (2018) argues for this point extensively while talking about endorsement. I submit that given that his considerations rely on there to be extrinsic epistemic reasons for endorsement, and given that the same reasons are the ones which make hypothesising rational, his point extends to hypothesis. Furthermore, given that hypothesising *p* is something we do irrespective of whether we are in a scientific research context, this guarantees that the gap between collective and individual rationality in the division of cognitive labour can be closed at a general level, namely in non-scientific inquiries as well as in scientific ones.

7 Conclusion

We can now bring our inquiry into the question of what doxastic attitudes we entertain while we inquire into some matter. I have defended that besides being doxastically neutral about a question, we have to acknowledge the existence of a distinctive type of attitude of cognitive inclination towards a given proposition qua answer to the question one is inquiring into. Questions about the epistemological import of these two attitudes and of the different stages of inquiry can now be raised. The remarks I have offered in the last section provide some promising directions for further inquiry on these issues.²⁵

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