




ARTICLE

Reasoning Simplifying Attitudes

Michele Palmira 

Complutense University of Madrid, Madrid, Spain
Email: michelepalmira@gmail.com

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Abstract

Several philosophers maintain that outright belief exists because it plays a reasoning simplifying role (Holton 2008; Ross and Schroeder 2014; Staffel 2019; Weisberg 2020). This claim has been recently contested, on the grounds that credences also can simplify reasoning (Dinges 2021). This paper takes a step back and asks: what features of an attitude explain its alleged ability to simplify reasoning? The paper contrasts two explanations, one in terms of dispositions and the other in terms of representation, arguing in favour of the latter and against the former. The proposed explanation yields two interesting results: first, both belief and other attitudes, such as acceptance and imagination, can play a reasoning simplifying role; second, credences do not simplify our reasoning.

Keywords: Reasoning simplification; credences; belief; doxastic dualism; representation; disposition; cognitive attitudes

1. Introduction

Doxastic dualism is the view that outright belief and credences exist and neither is reducible to the other. Doxastic dualists have to face what is sometimes called the *Bayesian Challenge*, which was first raised by Richard Jeffrey in the following, somewhat vivid, way:

I am inclined to think that Ramsey sucked the marrow out of the ordinary notion [of belief] and used it to nourish a more adequate view. But maybe there is more there, of value. I hope so. Show me; I have not seen it at all clearly, but it may be there for all that. (Jeffrey 1970: 171–2)

In a nutshell, the Bayesian Challenge asks doxastic dualists to show why, once we have accepted the existence of credences, we need a separate notion of outright belief.

A promising line of response starts from the fact that we are cognitively limited reasoners: It would simply be psychologically impossible for us to take all the decisions we take if we had to consider any old improbable possibility whenever we frame a reasoning problem. Thus, it is eminently plausible that we have and exploit *reasoning simplifying* attitudes, that is, attitudes that allow us to ignore highly improbable options,

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thereby greatly simplifying our reasoning tasks. Doxastic dualists (Holton 2008; Ross and Schroeder 2014; Staffel 2019; Weisberg 2020) harness the existence of reasoning simplification to argue that outright belief (henceforth “belief”) and credences exist and neither is reducible to the other because the former but not the latter simplify reasoning. Very recently, however, Dinges (2021) has argued that if belief should be the list of the reasoning simplifying attitudes, credences deserve to be on that list too. This seems to undercut the support of reasoning simplification considerations in favour of the dualist’s response to the Bayesian Challenge.

In this article I take a step back to address the following question: what’s the correct explanation of how a certain attitude simplifies reasoning? As far as I can see, without a proper answer to this question we won’t be able to settle the dispute around the role that reasoning simplification considerations can play in defusing the Bayesian Challenge. It is surprising that the question of how attitudes simplify reasoning has never been explicitly addressed in the debate. So, the main contribution of the paper is to fill in this gap.

After reconstructing the current dispute (§2), I compare two competing explanations of reasoning simplification, one in terms of the dispositions associated with the subject’s reasoning simplifying attitude – call this SIMPLIFICATION BY DISPOSITION (§3.1) – and the other in terms of the representational import of the target attitude – call this SIMPLIFICATION BY REPRESENTATION (§3.2). The paper argues against the former and in favour of the latter. The SIMPLIFICATION BY REPRESENTATION explanation yields two interesting results. First, both belief and other attitudes, such as acceptance and imagination, can play a reasoning simplifying role; second (§4), credences do not simplify our reasoning.

2. The Current Dispute on Reasoning Simplification

To begin with, let us have a case of reasoning simplification on the table. Consider an example due to Julia Staffel (2019: 940–1): S is trying figure out how likely it is to rain during an upcoming tennis match. The task at hand is complicated not only by the fact that the likelihood of rain depends on where the match will in fact take place, but also by the fact that S is unsure about where the match takes place, as represented by the following credence function:

$$\text{Cr}(\text{NY}) = 0.48$$

$$\text{Cr}(\text{Boston}) = 0.48$$

$$\text{Cr}(\text{LA}) = 0.04$$

Given the kind of limited reasoner S is, they reduce the complexity of the reasoning problem by ruling out that the match will take place in LA, working with a simplified credence function that doesn’t contain $\text{Cr}(\text{LA}) = 0.04$.

What does reasoning simplification consist in? The general idea is as follows: S’s reasoning at a certain stage, let us say the stage that involves the proposition p (call it the “ p -stage”), is simplified when the improbable option that not- p is eliminated at that stage. The fact that not- p is eliminated at the p -stage of S’s reasoning is explained by the fact that S holds a certain attitude towards p . Let me illustrate this idea with the

tennis match case. Suppose that the likelihood of rain conditional on the location is represented by the following conditional credences:

$$\text{Cr}(\text{rain}|\text{NY}): 0.7$$

$$\text{Cr}(\text{rain}|\text{Boston}): 0.9$$

$$\text{Cr}(\text{rain}|\text{LA}) = 0.1$$

Now, to determine the probability of rain, S has to apply the rule of total probability: each conditional credence about the likelihood of rain given where the match will take place has to be multiplied by one's unconditional credences about where the match will take place as follows: $(0.48 \times 0.7) + (0.48 \times 0.9) + (0.04 \times 0.1)$. And yet, if S ruled out that the match will take place in LA, they wouldn't have to go through calculating (0.04×0.1) and then adding the result to the previous ones. So, if S simplifies their reasoning, then at the stage in which they would have to compute (0.04×0.1) the proposition *that the match will take place in LA* gets eliminated from the premises of one's probabilistic reasoning, thereby simplifying that reasoning by avoiding the additional computational operations.

Doxastic dualists defend two claims: first, belief is the paradigmatic reasoning simplifying attitude; second, credences do not simplify reasoning. Key to such defence is the following claim (see Holton 2008: 36; Ross and Schroeder 2014: 264–6; Staffel 2019: 940–1; Weisberg 2020: 6–7):

BELIEF-TREATING AS TRUE DISPOSITIONAL LINK (“BTL_D” for short):

If S believes that p , then S is disposed to treat p as true in their reasoning.

In recent work, however, Alexander Dinges (2021) has pushed back, claiming that the case for taking belief to play a reasoning simplifying role is as strong as the case for ascribing that role to credences as well. Key to Dinges's strategy is the claim that the dispositional link holds for credences as well. More specifically, Dinges defends (2021: 200):

CREDENCE-TREATING AS TRUE DISPOSITIONAL LINK (“CTL_D” for short):

If S has a high credence in p , then S is disposed to treat p as true in their reasoning.

It's important to stress that, according to CTL_D, it's not necessary that S be maximally certain of p 's truth in order for them to have the target disposition. So, Dinges's distinctive claim is that a high credence in p that falls short of maximal certainty is reasoning simplifying.¹

Both BTL_D and CTL_D state necessary conditions on what it is to have a belief that p and a high credence in p , respectively. Such principles do not, by themselves, constitute explanations of reasoning simplification. And yet, we need to be reminded of what the dialectical context is: the claim that belief simplifies reasoning is meant to be part of an abductive response to the Bayesian Challenge saying that the attitude of belief needs to be included in our ontological inventory of the world because it is what best explains

¹The same holds, *mutatis mutandis*, for S's low credences.

the phenomenon of reasoning simplification. So, to establish whether such an abductive response to the Bayesian Challenge carries the day, we need to first establish what features of a certain attitude explain the phenomenon of reasoning simplification.

3. Two Competing Explanations of Reasoning Simplification

3.1. *Simplification by Disposition*

Principles such as BTL_D and CTL_D might be taken to suggest that reasoning simplification needs to be explained in dispositionalist terms. More precisely, one might think that the following explanation of reasoning simplification is correct:

SIMPLIFICATION BY DISPOSITION

For any subject S , proposition p , and attitude α : if S holds α towards p and S 's reasoning at the p -stage is simplified, then S 's reasoning is simplified at the p -stage because if S holds α , then S is disposed to treat p as true in their reasoning.²

According to SIMPLIFICATION BY DISPOSITION, reasoning simplification entails being disposed to treat the target p as true. One might worry that this is too strong though: if we take the disposition to treat p as true as a sufficient condition for reasoning simplification, we can get to the claim that belief simplifies reasoning via BTL_D and hypothetical syllogism. This, however, does not quite give what doxastic dualists want: if the disposition to treat p as true is only sufficient for reasoning simplification, nothing rules out the possibility that what simplifies S 's reasoning at the p -stage is not S 's holding α towards p but is rather some other cognitive (possibly sub-personal) mechanism. So, dualists could no longer argue for the existence of belief on abductive grounds, namely by claiming that belief exists because it's the only type of *mentalia* that would best explain reasoning simplification. This shows that doxastic dualists would need something like SIMPLIFICATION BY DISPOSITION if they wanted to defend the idea that it is S 's disposition to treat p as true that explains reasoning simplification.³

SIMPLIFICATION BY DISPOSITION, however, should be rejected. Consider the following scenario: S believes that not- p , wilfully accepts that p at the p -stage of their reasoning and, as a consequence, not- p gets ruled out at that stage. By "acceptance" I here refer to the attitude of taking p as true which is under S 's voluntary control, akin to a sort of decision of taking p as true in their reasoning irrespective of their confidence in p 's truth.⁴ If BTL_D holds, S is disposed to treat not- p as true in their reasoning. If S 's acceptance that p in such a scenario simplifies reasoning, then S 's disposition to treat p as true in their reasoning doesn't explain reasoning simplification: given BTL_D , S is

²To forestall misunderstanding: I'm not claiming that parties to the debate on the Bayesian Challenge have endorsed SIMPLIFICATION BY DISPOSITION in print. Indeed no one did. I'm just claiming that, given the adoption of principles such as BTL_D and CTL_D , one might naturally wonder whether the disposition to treat p as true that is typically associated to belief (and, according to Dinges, to high credences in p) can also explain why the target attitude simplifies reasoning. So, SIMPLIFICATION BY DISPOSITION seems to tally quite well with BTL_D and CTL_D . For this reason, discussing it will be instrumental to understanding what we need from an explanation of reasoning simplification.

³Again, I'm not claiming that doxastic dualists commit themselves to SIMPLIFICATION BY DISPOSITION. In fact, I think they should not. Rather, I'm claiming that if doxastic dualists wanted to use reasoning simplification considerations in favour of their view and explain reasoning simplification in dispositionalist terms, then they would have to accept SIMPLIFICATION BY DISPOSITION.

⁴See Cohen (1992) for a classic book-length treatment of the distinction between acceptance and belief.

in fact disposed to treat not- p as true (and therefore, S is disposed to treat p as false) in such a reasoning. An analogous objection to SIMPLIFICATION BY DISPOSITION can be mounted if we focus on CTL_D and suppose that S accepts p while having a high credence in not- p . This shows that SIMPLIFICATION BY DISPOSITION can't explain reasoning simplification in such type of scenario. I now consider some replies on behalf of SIMPLIFICATION BY DISPOSITION and argue that they all fail.

One might say that S cannot simplify their reasoning at the p -stage by accepting p , ruling out not- p while, at the same time, having a belief that not- p . Stated as it is, this reaction is unwarranted. The voluntary attitude of acceptance has already been included in the list of reasoning simplifying by doxastic dualists,⁵ and there's nothing in the very natures of acceptance and belief that makes it impossible for S 's reasoning at the p -stage to be simplified when S willingly accepts p at that stage and believes not- p . To see why, note that what matters for reasoning simplification is not that not- p gets eliminated from S 's doxastic life altogether, but rather that not- p is eliminated only from the reasoning S is currently performing. This is precisely what acceptance is for: to accept that p is to decide that p is true for the sake of proceeding with a certain reasoning independently of whether or not one believes that p (see e.g. Cohen 1992: 20). The lack of dependence relations between an acceptance that p and a belief that p ensures that one can accept that p even though one believes that not- p . Thus, an acceptance that p can simplify reasoning at the p -stage by ruling out not- p in the scenario we are considering.

One can insist that SIMPLIFICATION BY DISPOSITION was never intended to range over cognitive attitudes other than belief and credences in the first place. So, constructing objections to SIMPLIFICATION BY DISPOSITION which involve attitudes other than belief and credences, such as acceptance, is an illicit move. I disagree: drawing conclusions about whether or not credences simplify reasoning by relying on a mistaken explanation of reasoning simplification amounts to bad theorising. Theoretical responsibility dictates that we first give a plausible account of clear cases of reasoning simplification and then move on to assess which attitudes we have reason to regard as reasoning simplifying.

The supporter of SIMPLIFICATION BY DISPOSITION might try to give a direct argument for the claim that acceptance doesn't simplify reasoning. Suppose that Marie is a lawyer and doesn't have any sufficient evidence that her client is innocent. Nonetheless, Marie willfully accepts that they are for professional reasons. In such a case, Marie treats it as true that her client is innocent in the legal context, but it's unclear that the possibility that they are guilty has ever been ruled out. Even if Marie is acting as if her client were innocent, she might simultaneously doubt that they really are, entertaining the possibilities in which they are guilty. Now, it would be implausible to say that Marie hasn't accepted that her client is innocent on account of her lingering doubts. After all, accepting a proposition is something that you can do in the absence of sufficient evidence for it, and is therefore compatible with some room for doubt. It would thus seem that there's a sense in which Marie's acceptance of her client's innocence hasn't really simplified her reasoning: when it comes to whether she is really innocent and Marie engages in reasoning aimed at figuring out what the actual world is like, let's call this *actual* reasoning, acceptance might well fall short of playing the (alleged) simplifying role. On these grounds, the supporter of SIMPLIFICATION BY DISPOSITION might say that the view has to

⁵See Staffel (2019: 958, fn. 5).

be assessed by taking into account actual reasoning only, and that in such a type of reasoning only belief is reasoning simplifying.⁶

For the sake of argument, let's concede to the supporter of SIMPLIFICATION BY DISPOSITION the focus on actual reasoning. The first thing to note is that Marie's case won't help us assess whether or not acceptance simplifies actual reasoning. Insofar as Marie accepts that her client is innocent in a legal context, we've already restricted our focus to what we can call *legal reasoning*, whose aim is not to figure things out but rather to reach a verdict on the grounds of the admissible evidence. Insofar as she engages in legal reasoning, Marie treats the proposition that her client is innocent as true. But from this it doesn't follow that Marie is disposed to treat the proposition that her client is innocent as true also in actual reasoning.

This suggests that if we concede that SIMPLIFICATION BY DISPOSITION ranges over actual reasoning only, then counterexamples to this account of reasoning simplification have to be cases in which one engages in actual reasoning to establish whether p is the case, believes that not- p and accepts that p exactly for the purpose of figuring out whether p is the case. Cases like this exist: suppose, for instance, that one is reasoning about whether a certain formula p is a tautology of first-order logic. One believes that it is not and in order to come up with conclusive reasons in favour of this view, decides to take p as true for the sake of running a *reductio ad absurdum* type of argument. This shows that restricting the kinds of reasoning SIMPLIFICATION BY DISPOSITION ranges over won't make counterexamples go away.

One might wonder whether it is the relevant kind of disposition we associate with acceptance that needs to be restricted. Acceptance is often assumed to be context-dependent (see Cohen 1992), and so one might say that when one accepts that p one is disposed to treat p as true across a sufficiently wide range of contexts.⁷ This surely marks a contrast between acceptance and belief, as belief isn't context-dependent. But it's unclear that this saves SIMPLIFICATION BY DISPOSITION from the counterexample I've raised. The context-sensitivity of acceptance can at most motivate the thought that there can be cases in which one accepts that p but is not disposed to treat p as true since one is not in the relevant range of contexts. In such cases, one's acceptance that p isn't reasoning simplifying according to SIMPLIFICATION BY DISPOSITION. However, the counterexample I'm offering should not be read that way. The counterexample brings out the existence of cases in which one accepts that p in one of the relevant contexts wherein one is also disposed to treat p as true while, at the same time, believing that not- p . Suppose, for instance, that Marie accepts that her client is innocent (while reasoning in a legal context) but believes that they are not. Plausibly, this is one of the contexts in which such an acceptance comes with a disposition to treat the proposition that the client is innocent as true. This shows that there can be cases in which one accepts that p , believes that not- p , and one's acceptance that p comes with the relevant disposition of treating p as true in one's reasoning. So, the context-sensitivity of acceptance cannot make SIMPLIFICATION BY DISPOSITION immune to counterexamples.

Finally, the supporter of SIMPLIFICATION BY DISPOSITION might concede that an acceptance that p is reasoning simplifying and try to explain this by saying that if S accepts p , they are disposed to treat p as true in their reasoning. In the scenario at issue, however, this means that S is disposed to treat p both as true and as false in their reasoning. Thus,

⁶I owe this objection to an anonymous referee for this journal.

⁷I owe this point to an anonymous referee for this journal.

a simple appeal to the target disposition would still leave unexplained why S's reasoning gets simplified by ruling out not- p , as opposed to p .

The preceding discussion shows that SIMPLIFICATION BY DISPOSITION isn't equipped to explain all cases of reasoning simplification.

3.2. Simplification by Representation

The alternative account I propose is:

SIMPLIFICATION BY REPRESENTATION

For any subject S, proposition p , and attitude α : if S holds α towards p and S's reasoning at the p -stage is simplified, S's reasoning at the p -stage is simplified because α represents-as-true p in S's reasoning.

To start unpacking SIMPLIFICATION BY REPRESENTATION, let us focus on the claim that "an attitude α represents-as-true p " and distinguish between what α represents and how α represents what it does.⁸ When α represents-as-true p , p 's truth is not what α represents, for α represents p only, but it is how α represents p . To put the same point differently, p 's truth is not part of the *content* that α represents but is rather part of the *mode* whereby α represents p . There are various candidate modes whereby p is represented-as-true (call them "cognitive modes"): acceptance, belief, (propositional) imagination, supposition, assumption are plausible candidates. I suggest telling cognitive modes apart from one another by appealing to the existence of different relations that S bears to a mental representation whose content is p . Such relations differ from one another since their respective regulatory mechanisms, namely the cognitive mechanisms that are responsible for the formation, retention and revision of the target attitude, are geared towards different functions.⁹ For instance, it is commonplace to say that the function of belief in our cognitive architecture is to be true. We can cash out this idea as follows:

BELIEF FUNCTION

S's belief that p represents-as-true p for the sake of getting p 's truth-value right.

The function of an acceptance that p , by contrast, is to enable the acceptor to decide that p is true and act upon that decision in reasoning for whatever purposes they might have in the circumstances they are in. We can cash out this idea as follows:

ACCEPTANCE FUNCTION

S's acceptance that p represents-as-true p for the sake of willingly treating p as true in their reasoning.

⁸I borrow the label "represents-as-true" and the main idea behind it from Kriegel (2015: 43).

⁹For a general defence of the idea that we can distinguish different cognitions by looking at their relation with truth, see Shah and Velleman (2005). Note that while I am here assuming a psycho-functional, representationalist approach to propositional attitudes (see Quilty-Dunn and Mandelbaum 2018 for a primer), this is for the sake of presentation only. For example, a dispositionalist can maintain that different dispositional stereotypes correspond to different cognitive modes; or else, one might go for a normativist approach and say that the distinct modes whereby p can be represented-as-true are to be individuated by distinct standards of assessment or norms. See Schwitzgebel (2002) for a dispositionalist account of belief, and McHugh and Whiting (2014) for an introduction to normativism about belief.

To give yet another example, let us focus on the type of propositional imagination that has often been associated with modal thought, fiction and pretence. Imagination has been linked to our take on what would have happened had things been different (see Williamson 2000; Ichikawa and Jarvis 2012): the thought here is that imagination stands to counterfactual scenarios like belief stands to the actual world. In his seminal 1990 book, Kendall Walton writes (1990: 41): “Imagining aims at the fictional as belief aims at the true. What is true is to be believed; what is fictional is to be imagined.” Authors such as Currie (1990), Stock (2017) and García-Carpintero (2019), following Walton’s lead, have expanded on the thought that a propositional imagining that p is a bona fide representation of p as being the case in the fictional, as opposed to the metaphysical, world. So, in analogy with BELIEF FUNCTION and ACCEPTANCE FUNCTION, we have:

IMAGINATION FUNCTION

S’s imagining that p represents-as-true p for the sake of getting p ’s truth-value in the counterfactual world right.

Note that some authors (see e.g. Stock 2017; García-Carpintero 2019) claim that the imagination that is necessary for engagement with fiction is a species of the more general genus I have here described. I can be neutral on these matters, but nothing prevents us from acknowledging the existence of a distinctive enough type of imagination – what Stock (2017) calls *f-imagining* – whose function is to represent-as-true its content for the sake of getting p ’s truth-value in the fictional (as opposed to the more general “counterfactual”) world right. Analogous stories can be told about supposition, assumption, and other cognitive modes of representing-as-true a propositional content.

Having sketched an account of how a cognitive attitude represents-as-true its content, we can now articulate SIMPLIFICATION BY REPRESENTATION’S pattern of explanation of reasoning simplification.

The schematic idea is this: when S’s attitude α towards p represents-as-true p and S deploys α at the p -stage of their reasoning, only p is put before S’s mind at that stage. This ensures that the possibility that not- p doesn’t appear before S’s mind at the p -stage of their reasoning, thereby reducing the complexity of S’s reasoning at that stage. The idea of a proposition being put before one’s mind is metaphorical, but what I concretely mean is this: in the tennis match example, S is reasoning about how likely it is that it’ll rain during an upcoming tennis match. At a certain stage of that reasoning, right before performing the addition of all the relevant credences as per the total probability theorem, S rules out the possibility that the match will take place in LA and only the proposition that the match won’t take place in LA is taken under consideration for the relevant computational operation, something which greatly simplifies the reasoning problem at hand.

One might say that this idea of considering a certain proposition for the specific reasoning task one is performing restricts reasoning simplification to cases of *active* reasoning, namely the kind of reasoning we perform deliberately while somewhat consciously going through every option and performing the relevant reasoning steps. And yet, reasoning can also take a more passive shape in which there is a certain transition from certain premise attitudes to a certain premise conclusion which automatically and unconsciously reached.¹⁰ Now, it might be hard to think of the reasoning

¹⁰As several recent studies show, there is no clear-cut distinction between active, conscious and personal-level reasoning on the one hand, and passive, unconscious and sub-personal reasoning, on the other. See Frankish (2010) for a primer.

involving in the tennis match case as a purely passive, that is, largely unconscious and automatic, reasoning. It seems that, given the kind of complexity involved in the reasoning, S is indeed going through each option, actively making the calculations. However, I think that we can accommodate the idea of a proposition's being ruled-out even within more passive forms of reasoning: in such cases, the proposition simply plays no role in the transition from a certain premise to a certain conclusion. In the tennis match case, the proposition that it will rain in LA plays no role in S's – let us assume – unconscious and automatic reasoning about the likelihood of rain during the upcoming tennis match: that proposition simply is not part of the premises of S's probabilistic reasoning.

The schema just offered will be instantiated differently depending on the cognitive mode we focus on. Focusing on belief, when S's belief that p represents-as-true p and S deploys at the p -stage their reasoning, only p is put before S's mind (at the p -stage) as being the case in a metaphysically actual world and not- p is ruled out by such a world. When S accepts p and deploys it at the p -stage of their reasoning, S doesn't rule out not- p from the metaphysically actual world. Rather, when S accepts that p , only p is put before S's mind as being the case in what we may call S's *volitionally* actual world, where the volitionally actual world is the world that is the case according to S's will for the purpose of the reasoning they are conducting.¹¹

Belief and acceptance are attitudes we deploy in practical and theoretical reasoning about the actual world, which I've dubbed "actual reasoning". The foregoing, then, articulates SIMPLIFICATION BY REPRESENTATION's pattern of explanation of practical and theoretical actual reasoning simplification. However, cognitive studies on modal reasoning and engagement with fiction and pretence suggest that we use and exploit our imagination to reason counterfactually and fictionally. Imagination is similar to belief as far as their inferential potentials are concerned: it has been argued that when one engages in counterfactual reasoning, namely reasoning of the form "If I φ -ed, then x would ψ ", one imagines the antecedent and the upshot is an expectation about what would happen if the world were as imagined (see Williamson 2000; Currie and Ravenscroft 2002; Ichikawa and Jarvis 2012; Sinhababu 2013). If so, when S imagines that p at the p -stage of their counterfactual reasoning, only p is put before S's mind (at the p -stage) as being the case in the possible world considered as counterfactual and not- p is ruled out by such world. This is how, according to SIMPLIFICATION BY REPRESENTATION, counterfactual reasoning gets simplified by propositional imagination. Assuming, with Currie (1990), Walton (1990), Stock (2017) and García-Carpintero (2019), that propositional imagination is necessary to engage in fiction, let us say that when S imagines that p at the p -stage of their fictional reasoning, only p is put before S's mind (at the p -stage) as being the case in the *fictionally* actual world and not- p is ruled out by such a world, where the fictionally actual world is the world that is the case according to the fictional project S is undertaking while, for instance, reading a certain novel. This is how, according to SIMPLIFICATION BY REPRESENTATION, propositional imagination can simplify fictional reasoning.

¹¹What if I accept that p just for the purpose of conversation because I want to eventually show, maybe via a reductio argument, that not- p ? Doesn't this show that not- p isn't excluded from consideration after all, since I conclude that not- p after I started with an acceptance that p ? Here it's important to see that if one's acceptance that p does simplify one's reasoning, it does so at stage in which p plays a premise-supplying role. So, not- p gets eliminated from the premises of one's reasoning even though it then shows up as its (believed) conclusion.

This completes my presentation of SIMPLIFICATION BY REPRESENTATION. Let us turn to assessing its merits.

Let us begin with Staffel's tennis match case: SIMPLIFICATION BY REPRESENTATION can account for it by saying that S's belief *that the match won't take place in LA* is reasoning simplifying since such a proposition is represented-as-true for the sake of getting its truth-value right and this cognitive mode doesn't leave open *that the match will take place in LA*. Focus now on the case that spells trouble for SIMPLIFICATION BY DISPOSITION, namely the scenario in which S believes that not- p , accepts that p and simplifies their reasoning at the p -stage by ruling out not- p . As I read the case, S deploys or activates their acceptance that p in reasoning, whereas they don't deploy or activate their belief that not- p . If S doesn't deploy their belief that not- p in their reasoning, that attitude doesn't represent-as-true not- p in S's reasoning. So, the fact that S's belief that not- p rules out the possibility that p doesn't contradict the fact that S's acceptance that p represents-as-true p in S's reasoning and can therefore be reasoning simplifying. This, to my mind, shows that SIMPLIFICATION BY REPRESENTATION is superior to SIMPLIFICATION BY DISPOSITION.

At this stage, one might worry that the two views are just notational variants of the same idea.¹² I don't think they are though. Combining SIMPLIFICATION BY DISPOSITION with CTL_D entails that credences are reasoning simplifying attitudes, whereas combining SIMPLIFICATION BY REPRESENTATION with CTL_D doesn't. This is a distinction that will make a crucial difference as to the question of whether credences are reasoning simplifying attitudes. I will come back to this below.

To keep assessing SIMPLIFICATION BY REPRESENTATION, I now want to consider two alleged data that are meant to spell trouble for the idea that belief, once understood in a standard fashion, is reasoning simplifying. These data are presented in Dinges (2021). My aim is to argue that such data can be explained in a SIMPLIFICATION BY REPRESENTATION-friendly way. The first alleged datum is that we often simplify reasoning by ruling out a proposition's falsity on the basis of purely statistical evidence. Dinges maintains that (2021: 202) "[belief] is often assumed to be something like the inner version of assertion" and goes on to claim that in the tennis match case we would not assert that the match doesn't take place in LA. If Dinges is right then either belief is not intimately linked to assertion or it is not the attitude we deploy when we simplify reasoning on purely statistical grounds.

The dilemma, however, rests on a revisionary take on the significance of purely statistical evidence cases for assertion: what is standardly acknowledged in the literature is that it seems *inappropriate* to assert the content of a belief in cases of purely statistical evidence and not that we don't or wouldn't assert propositions in such cases: in lottery situations, for instance, it's not surprising to hear people asserting "My ticket is a loser" by reflecting on the very high probability that their ticket is a loser. It'll take a little philosophical effort to explain why there's something off with that assertion.¹³ The fact that it is somehow inappropriate to assert propositions in such cases would at most show that it is also somehow inappropriate to believe them (I say "at most"

¹²Why can't SIMPLIFICATION BY DISPOSITION also appeal to this idea? The only way to do so in a dispositionalist framework is to say that, in the case at hand, S's disposition to treat p as true in their reasoning is manifested whereas S's disposition to treat not- p as true in their reasoning is not. This doesn't rescue SIMPLIFICATION BY DISPOSITION though: on this proposal, what would explain reasoning simplification is the manifestation of a disposition and not the disposition itself, contra SIMPLIFICATION BY DISPOSITION.

¹³See Williamson (2000) and, for further references, Marsili and Pagin (2021).

since this would require making the disputed assumption that assertion and belief are governed by the same norm.) This verdict in no way speaks in favour of the dilemma presented by Dinges though: from the fact that it is inappropriate to assert and believe p in certain circumstances it doesn't follow that we don't or wouldn't assert or believe p in those circumstances. SIMPLIFICATION BY REPRESENTATION is therefore left unscathed.¹⁴

One might reformulate the previous point in normative terms and say that it's appropriate to rule out not- p on the basis of merely statistical evidence, whereas it's not appropriate to assert p on such grounds. This leads us to the interesting question of what norms, if any, govern reasoning simplification, and whether those norms align to norms of assertion and belief. Addressing this question in depth is beyond the scope of this paper, but the following point seems to me correct: reasoning simplification appears to be permitted in cases where ignoring a negligible possibility helps us spare time and cognitive resources. So, while there can definitely be cases in which we hold a very high credence in p on the grounds of merely statistical evidence, what ensures the permissibility of ruling out not- p is not the statistical support in favour of p 's truth but rather the cognitive benefits that reasoning simplification would bring about in such a case. This, to my mind, suggests that while assertion and belief are typically governed by epistemic norms, reasoning simplification might be subject to practical norms that would explain the appropriateness of ruling out not- p in spite of the fact that one holds p on the basis of merely statistical evidence.

The second alleged datum is that reasoning simplification is sensitive to stakes. Dinges (2021: 203) offers the following case:

[In planning a picnic in Palo Alto] we grant that it will not rain ... assuming that we believe this outright. Now suppose that I do not plan a picnic, say, but a trip to my wedding. My wedding dress is delicate, and it would not withstand rain.

Dinges claims that we wouldn't rule out the proposition *that it won't rain* and that this shows that reasoning simplification is sensitive to stakes: when the stakes regarding S 's belief that p are higher than a certain threshold, then it's intuitively plausible to maintain that we don't simplify our reasoning at the p -stage by ruling out the possibility that not- p , or so Dinges contends.

We are not compelled to accept this reading of the rain case though, for there's an alternative reading of it which is compatible with SIMPLIFICATION BY REPRESENTATION. The alternative reading has it that the intuitive datum elicited by the rain case is that I *should* not simplify my reasoning by ruling out the possibility that it will not rain since, given the high-stake scenario I'm in, I don't know that it will not rain. To substantiate further

¹⁴Relatedly, Dinges (2021: 202) claims that it is often assumed that a belief that p would feel like knowledge that p and that we wouldn't feel that we know p when we simplify reasoning in purely statistical evidence cases. Dinges uses this idea to bolster an analogous dilemma where "assertion" is replaced with "knowledge". This assumption strikes me as more controversial than the belief-assertion link though. Dinges refers to Greco (2015), who equates belief with probability 1, something which is far from standard in the literature and also departs from doxastic dualism. Greco (2015), in his turn, refers to Stalnaker (2006) and Williamson (2000). Stalnaker (2006) maintains that if one believes that p , one believes that one knows that p , and one might complain that this is too strong a principle. Williamson (2000), by contrast, defends the non-standard view that belief is a species of knowledge. Appealing to such views about belief carries limited dialectical weight in the present context. This said, it is open to a supporter of SIMPLIFICATION BY REPRESENTATION to explain purely statistical evidence cases by saying that, in such cases, we believe p but have the intuition that we don't bear a *normative* relation, i.e. knowledge, to it.

the alternative reading, we might appeal both the existence of epistemic norms governing practical reasoning and the idea that practical factors affect such norms. Suppose that if I'm reasoning about how to go to my wedding in Palo Alto, I should treat the proposition that it won't rain as a reason to act in such-and-such a way only if I know that it won't rain.¹⁵ If we further assume that practical factors like stakes affect knowledge,¹⁶ then it's plausible to say I don't know that it won't rain in Palo Alto. This shows that I should not treat the proposition that it won't rain in Palo Alto as a premise in my practical reasoning and, therefore, that it's inappropriate for me to not consider the possibility that it'll rain in Palo Alto in framing my decision problem. So, the lesson we can draw from the rain case is that it is inappropriate or irrational to simplify our reasoning because the stakes are so high that we should consider even the crazily improbable options. SIMPLIFICATION BY REPRESENTATION is fully compatible with this lesson.

4. Credences are not Reasoning Simplifying Attitudes

I have argued that SIMPLIFICATION BY REPRESENTATION gives us a good account of reasoning simplification. We can then bring such an explanation to bear on the general question of how reasoning simplification considerations can support the existence of certain attitudes. Let us remind ourselves of the dialectic here: doxastic dualists argued that belief exists and differs from credences since the former but not the latter are reasoning simplifying attitudes. To evaluate the success of this strategy, we should focus on what I have called above actual reasoning. Recall now what the main idea behind credences is: we have, at least in principle, infinitely many doxastic options to take with respect to p and such options, i.e. credences, encode varying degrees of uncertainty about p 's truth. Crucially, it is in the very nature of credences that they are non-committal as to the truth or falsity of their object *unless they are 0 or 1*: while S 's maximal credence in p doesn't leave open that not- p , S 's high credence in p still leaves open that not- p .¹⁷ Surely this is compatible with the fact that S can have a high credence in p and simplify their reasoning by rounding that credence up to 1. However, bear in mind that the distinctive claim advocated by Dinges is that a credence that falls short of maximal certainty/uncertainty, such as a 0.9 credence in p , can *itself* be reasoning simplifying. And yet, once we accept SIMPLIFICATION BY REPRESENTATION, this claim turns out to be false: S 's 0.9 credence in p commits S to being highly confident in p 's truth, but it doesn't as such commit S to representing-as-true p in any sense. So, given SIMPLIFICATION BY REPRESENTATION, S 's 0.9 credence in p is not reasoning simplifying. I thus conclude that credences (that fall short of maximal certainty/uncertainty) do not simplify our actual reasoning.

5. Conclusions

The proposed account of reasoning simplification rests on the idea that certain attitudes represent-as-true their propositional contents. On such an account, credences do not

¹⁵See e.g. Hawthorne and Stanley (2008). I'm using the knowledge norm of practical reasoning for the sake of presentation only; the point carries over, *mutatis mutandis*, to other epistemic norms of practical reasoning and pragmatically encroached epistemic properties.

¹⁶See e.g. Stanley (2005).

¹⁷For slightly different ways of putting the same point, see e.g. Buchak (2014: 286), Carter *et al.* (2016: 2326), Jackson (2019: 2478) and Ross and Schroeder (2014: 277).

simplify our reasoning since, by definition, they do not represent-as-true their propositional contents. So, reasoning simplification considerations can in the end be invoked to support the existence of an irreducible attitude of outright (or full) belief. Doxastic dualists should rejoice, as they now have an account of reasoning simplification which puts them in a better position to meet the Bayesian Challenge than they were before.

To my mind, however, the interest of the foregoing goes beyond the debate on doxastic dualism. Plausibly, reasoning about counterfactual or fictional scenarios is also hostage to our cognitive limitations in a way that suggests that we also take simplification shortcuts when we reason counterfactually or fictionally. SIMPLIFICATION BY REPRESENTATION gives us the tools to understand how reasoning simplification happens in those cases too.¹⁸

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Michele Palmira is a Ramón y Cajal fellow in the Department of Logic and Theoretical Philosophy of the Complutense University of Madrid. He works in epistemology, philosophy of mind and philosophy of language. He has articles appearing in *The Journal of Philosophy*, *Philosophical Studies*, *Philosophical Quarterly* and *Canadian Journal of Philosophy*.