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# Neutrality and Force in Field's epistemological objection to platonism

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## ABSTRACT


Field's challenge to platonists is the challenge to explain the reliable match between mathematical truth and belief. The challenge grounds an objection claiming that platonists cannot provide such an explanation. This objection is often taken to be both neutral with respect to controversial epistemological assumptions, and a comparatively forceful objection against platonists. I argue that these two characteristics are in tension: no construal of the objection in the current literature realises both, and there are strong reasons to think that no version of Field's epistemological objection which has both Neutrality and Force can be construed.

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## 1. Introduction

Benacerraf (1973) famously presents a dilemma in the philosophy of mathematics: taken together, the most plausible (according to him) theories of knowledge and mathematical truth – the causal theory of knowledge, and mathematical platonism, respectively – imply that humans cannot have knowledge of mathematical truths. This is because platonic objects are abstract in the sense of not being able to enter into causal relations. While most philosophers today hold that this particular dilemma can be avoided, there is *something* about the Benacerraf problem that still resonates profoundly with a lot of philosophers. It is widely agreed that Field (1989) captures this something well. He presents

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platonists with a *challenge*. The challenge is to explain how it can be that mathematicians' mathematical beliefs are largely true, if such truths are about platonic objects. Field's epistemological *objection* to platonism is that platonists cannot provide such an explanation.

There is a rich literature on Field's challenge, and a cluster of allegedly closely related problems or arguments, known under a variety of labels: the access problem, the explanationist objection, the epistemological queer-ness problem, the reliability challenge, the integration challenge. It is often said that epistemological arguments can be pressed against realist theories in other areas such as modality,<sup>1</sup> metaethics<sup>2</sup> and logic,<sup>3</sup> based on an explanatory challenge that corresponds to the one Field raises in the philosophy of mathematics. Ironically, much of this literature on Field's challenge debates what the challenge really demands, and what the objection really establishes, despite the wide agreement that Field captures whatever the epistemological problem for platonism (and similar theories) is.

In this paper, I contribute to that debate by arguing that there is no construal of Field's epistemological objection to platonism which embodies both of two key features commonly ascribed to it, which I refer to as Neutrality and Force. After introducing Neutrality and Force in Section 2, I distinguish in Section 3 between two ways that Field's challenge and related objection have been construed. I argue that as they stand, none of them accommodate both Neutrality and Force. In Section 4, I discuss whether a version of Field's epistemological objection with both features can be construed, and give some reasons to doubt the tenability of such a project. My focus is on Field's challenge as it applies to mathematical platonism, but insofar as a similar challenge can be pressed as an objection to (some variants of) realism about other domains, my conclusion is a lesson also for those domains.

## 2. Field's challenge: Neutrality and Force

It is helpful to note from the outset that whatever the epistemological challenge is that platonists face, it flows from a requirement or desideratum that applies generally, to *any* philosophy of mathematics, if it applies at all. The point is that meeting the requirement or desideratum in

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<sup>1</sup>For example Stalnaker (1996), Peacocke (1999). For discussion, see, e.g. Grundmann (2007), Roca-Royes (2010), (Sjölin Wirling 2019a).

<sup>2</sup>For example Mackie (1977). For discussion, see, e.g. Clarke-Doane (2015), Enoch (2010), Korman and Locke (2020).

<sup>3</sup>Schechter (2010).

question appears more difficult – a *challenge* – once one assumes platonism. According to those (arguably including Field) who press this challenge as an *objection*, platonists cannot meet it, and therefore, we have good reason to reject platonism. But Field's challenge *itself* is not an objection against platonism – the objection is that the platonist cannot meet it.

The challenge in question is to explain a certain fact. The explanandum fact is characterised in a number of different ways in the debate, but at its most basic, it is the fact that mathematicians' mathematical beliefs so accurately reflect the mathematical facts.<sup>4</sup> That is, the challenge is to explain a certain correlation, the pervasive belief–truth match in the domain of mathematics. Let us dub this explanandum fact Match.

All parties agree that the explanation of Match required is *not* one that needs to appease a sceptic, who reminds us of the possibility that we could be massively mistaken and that it must be shown that we are not. The *existence* of the pervasive mathematical belief–truth correlation is not in question. The issue is with explaining it, and platonists are, as much as anyone else, allowed to rely on the assumption that Match obtains, in providing the relevant explanation (Balaguer 1995, 306; Clarke-Doane 2017, 21; Liggins 2006; Linnebo 2006, 551–552). To illustrate, consider perception. We can offer an explanation of why our perceptual beliefs are generally true, but this explanation blatantly presupposes that perception *does* reliably lead to true beliefs. A sceptic would not be convinced by this, but it is still enough to meet the corresponding explanatory requirement in the case of the belief–truth match for perception. The objection is that even then, platonists cannot provide an explanation.

It is notable that Field does not give Match any epistemological gloss, i.e. he does not say whether the pervasive belief–truth correlation amounts to knowledge, or warranted belief. He does sometimes express the explanatory task as that to explain the reliability of mathematicians' mathematical beliefs with respect to mathematical truth (1989, 26–27). But although many epistemologists take reliability as epistemically relevant, Field does not explicitly connect it with any particular epistemic state. So, the challenge is not to explain that mathematicians' beliefs enjoy this or that positive epistemic status. It is only to explain how come they are reliably true (whatever else this implies, epistemologically speaking).

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<sup>4</sup>The accuracy of many mathematical beliefs can be explained with reference to the truth-preserving nature of proof, since a lot of what mathematicians believe are results that they have proven based on axioms they accept. However, as Field (1989, 231) points out, the challenge remains to explain the pervasive correlation between axioms that mathematicians accept and axioms that are true.

This is an expression of the challenge's neutrality with respect to epistemological theories and particular analyses of epistemological concepts – Neutrality, for short. Neutrality is an alleged key virtue of Field's challenge. Indeed, it is one of the main reasons Field's challenge is seen as such an improvement over Benacerraf's formulation.<sup>5</sup> Unlike Benacerraf's dilemma, Field's challenge does not rely on the correctness of any particular theory of knowledge – this is widely recognised in all camps of the debate (Clarke-Doane 2017, 20; Field 1989, 232–233; Liggins 2006, 137–138; 2010, 71). Neutrality gives the wielder of an objection based on Field's challenge a dialectical advantage, since the platonist cannot avoid facing up to the challenge by simply rejecting whatever analysis of knowledge that the objector would otherwise be relying on. This is a pertinent issue since discussions over how 'knowledge' should be cashed out are as fraught as ever.

It is less widely recognised – a notable exception here is Liggins (2006, 2010, 2018) – that by the same dialectical token, Neutrality should apply more generally to all substantial, controversial assumptions about core epistemic concepts, besides 'knowledge'. The apparent *need* for Neutrality arises out of the fact that philosophers disagree over the conditions for knowledge – its point is to gain leverage for the objection *despite* this disagreement. But philosophers disagree also over the conditions for other epistemic states, such as justification or warrant. It is presumably as bad if platonists can dodge the challenge and escape the objection by rejecting a particular analysis of another epistemic concept as it is if they can dodge it by rejecting a particular theory of knowledge.

As noted, Field's challenge is part of an epistemological objection to platonism. Here is its bare-bones structure:

- P1. All philosophies of mathematics face the challenge to explain Match.
- P2. Assuming platonism, it is impossible to explain Match.
- C. We have reason to reject platonism.

This argument is widely thought to provide a forceful reason to reject platonism, if successful. Field writes:

The idea is that *if it appears in principle impossible to explain this* [Match], then that tends to *undermine* the belief in [platonic] mathematical entities, whatever

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<sup>5</sup>For a dissenting voice, see Nutting (2020), who on basis of a particular interpretation of the Benacerraf problem (detailed in her 2016) argues that Field's challenge is not an improvement on Benacerraf's.

reason we might have for believing in them. (1989, 25–26, emphasis in original)<sup>6</sup>

Taken literally, this passage expresses something quite strong: if we have reason to believe that platonists cannot meet the explanatory challenge, then that defeats whatever other justification we might have for believing in platonism. Roughly along these lines, Baras maintains in a recent paper that Field and authors putting forward arguments in the same ballpark ‘do not just want *some* epistemic reason; they want a strong epistemic reason, strong enough for us to accept their conclusion, not just raise our confidence a tiny bit’ (2020, 1512). But we do not need to go as far as demanding that Field’s epistemological objection should be strong enough to demand rejection of platonism on its own. The argument occurs in a context with the same structure as many philosophical debates: there are several competing theories and arguments attempt to settle which one gives the overall best explanation. Thus, arguments against a theory are typically not supposed to be ‘knockdown arguments’ (whatever those are), but to show that the theory in question has a certain cost or deficit, especially compared to some competing alternative(s). An objection like Field’s gives a reason to reject platonism, one to be weighed against reasons to endorse it, and compared to reasons for and against competing theories like nominalism and/or fictionalism. Nevertheless, some costs and deficits are heavier to bear than others, and it is supposed to be pretty bad for platonists if it is true that they cannot meet Field’s challenge. This is what I will refer to as Force. Just as Field’s challenge is taken to have great Force, arguments based on the corresponding explanatory challenge in other domains like morality or modality are thought to be among the most serious objections against (some) realist theories.

Two things to note at this point. First, Force is a question of how strong Field’s objection is *if it goes through* – regardless of whether it does. It may well be that Field’s objection has great Force, but ultimately turns out to be unsuccessful.<sup>7</sup> Second, from the bare-bones argument, it is not clear

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<sup>6</sup>Field’s wording here, ‘appears in principle impossible’, is unfortunately murky. People no doubt have different views on how it ought to be rephrased, but as evident from P2 above I simply read it as ‘impossible’. It is widely agreed that the problem is not that there isn’t already an actual, full explanation on the table – that would be too stringent. Of course, if no successful explanation has actually been presented yet, despite platonist efforts, this lends some support to the impossibility claim. But the main problem is that it is allegedly very difficult to see what such an explanation could look like (Field 1989, 230–231), even in principle.

<sup>7</sup>To see this, consider Balaguer’s (1995) ‘full-blooded platonism’, the view that all possible mathematical objects exist. On this view, any consistent mathematical theory we could come up with is true, and so there is no way for us to be wrong about mathematics (as long as we are right about consistency).

why failure to meet the challenge yields a reason to reject platonism. The argument must be fleshed out to make clear where the Force is coming from. As we shall presently see, there are two different strands in the literature with respect to this, representing two distinct ways to construe Field's objection.

### 3. Two conceptions of Field's objection

Match calls out for explanation – but providing an explanation is challenging given platonism. But why, more exactly, is it bad for platonists if Match is left unexplained? I outline two different answers to this question, which in turn usefully delineates two camps in the debate over the nature of Field's objection. I refer to them as Team Explanatory Power and Team Undercutting Defeat. They each have their own way to fill out the bare-bones argument. Moreover, as we shall see, they each emphasise one of Neutrality and Force, but have trouble realising the other. This brings out a tension between these two aspects.

#### 3.1. Team Explanatory Power

According to Team Explanatory Power, it is bad for platonists that they cannot meet Field's explanatory challenge simply because it means leaving unexplained a fact that should be explained. Liggins (2006, 2010, 2018) is the most prominent proponent of this construal, but see also Berry (2020) and Sjölin Wirling (2019b).

Liggins taps into the general idea that metaphysical theories are supposed to explain certain phenomena, and if a particular theory fails to do so, that is a reason to reject it – at least insofar as there are alternative theories that have greater explanatory power. Failing Field's challenge is an embarrassment for platonists because their theory has failed to accomplish an important explanatory task that befalls a philosophy of mathematics. Match 'is the sort of phenomenon which demands explanation' (2018, 1028).

In a recent paper, Berry elucidates this explanatory failure in terms of a shared, general norm of coincidence avoidance. That is, it is a

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Balaguer offers his view as a version of platonism which *can* meet Field's challenge, and Field acknowledges that it can. So, the objection fails to go through against full-blooded platonism, but this does not mean that it lacks Force. Balaguer acknowledges the legitimacy of the challenge, and that it would be (and, for all he argues, it *is* really bad for traditional platonists) really bad if full-blooded platonists could not meet it.

desideratum of theories that unexplained coincidences should be avoided. Insofar as a theory is committed to more unexplained coincidences than its rivals, that is a reason to reject it. It is plausible that platonists will endorse a general norm of coincidence avoidance, and hence recognise the challenge. The reason it is bad if the platonist cannot explain Match is simply that it commits platonists to ‘some “extra” coincidence (the correlation between human beliefs and reality), beyond those required by competing, less realist, approaches to the same domain’ (2020, 688).

The bare-bones argument is thus filled out as what I dub UNEXPLANATORY:

P1a. All philosophies of mathematics face the challenge to explain Match as non-coincidental.

P2a. Assuming platonism, it is impossible to explain Match as non-coincidental.

P3a. If it is impossible to explain Match as non-coincidental given some theory  $T$ , then  $T$  is committed to postulating Match as a brute coincidence.

P4a. Platonism is committed to postulating Match as a brute coincidence (from P2a, P3a).

P5a. If some theory  $T$  is committed to postulating some extra coincidence, this is a reason to reject  $T$ .

C. We have reason to reject platonism.

UNEXPLANATORY clearly conforms to Neutrality. Indeed, this is a key priority for Team Explanatory Power. Liggins stresses that Field (1989) makes no mention of the relation between justification and (explanation of) reliability of the belief–truth match and Berry is likewise careful to stay away from further specifying the nature of the explanandum fact.

However, Team Explanatory Power appears to face a problem related to Force. We are missing a motivation for why this explanatory task is so important that its failure gives a *strong* reason to reject platonism. As Berry herself notes, coincidence avoidance is a matter of degree. But then, even if UNEXPLANATORY goes through – if platonists are committed to some extra coincidence compared to their rivals – it is not clear that this a comparatively forceful objection. After all, no theory is perfect in this regard. All metaphysical theories leave some facts unexplained, and are committed to some coincidences. Platonists can seemingly agree that having to leave certain facts unexplained and/or coincidental is a regrettable cost, without having to be *too* worried about it. There will



always be some brute facts, platonism has other virtues and explanatory power in other regards. In short, if coincidence avoidance quite generally is the only rationale behind Field's objection, platonists can just acknowledge this cost, and move on. They may also try and pick up on something Lewis says in response to Armstrong's complaint that Ostrich nominalism fails to explain the fact that there is the objective similarity between distinct individuals. Lewis points out that 'not every *account* is an *analysis*', and that Ostrich nominalists can neither be accused of failing to make place for the fact (they don't deny it) nor for failing to answer the question – sometimes answering that a fact is brute *is* an account (1983, 352). Similarly, platonists make place for Match, and they could insist that there is no more explanation to be had of it after a certain point. This does not rhyme with Force.

The critic's comeback here may seem obvious. Field readily accepts that 'there is nothing wrong with supposing that some facts about mathematical entities are just brute' but to do so with Match is 'another matter entirely' (1989, 232). Match is simply the kind of fact which it would be highly unpalatable to have to regard as a brute. Similarly, Berry consistently talks about Match as an intuitively 'unattractive coincidence', i.e. one of those that better be explained. In short, some facts are more fatal to leave unexplained than others, and Match is one of them.

But Team Explanatory Power needs a way of supporting the claim that Match is an especially bad fact to leave as an unexplained coincidence. Perhaps they might appeal here to what Baras (2020) in a recent critical paper terms 'the striking principle'. The idea would be that Match is a fact of an especially 'striking' (Field 1989, 26) kind that theories are under extra pressure to explain as non-coincidental.<sup>8</sup> Striking facts are such that if a theory implies that one of them is unexplainable, then one must either deny that the striking fact obtains, or reject the theory in question. In this case, denying Match is off the table, so platonism should be rejected. As Baras notes, to elucidate and motivate a general striking principle faces serious obstacles. In order to support their case, authors who appeal to strikingness tend to provide examples of allegedly striking facts – outside of the philosophical contexts – that call out for explanation, where it seems reasonable that we should reject either the fact or the theory, if the striking fact is unexplainable given the theory. These typically include monkeys randomly typing complete sentences,

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<sup>8</sup>See also Street (2006, 2008) for appeal to the 'strikingness' of the correlation between the content of evaluative truths and the moral judgements evolution would push us towards, in her argument against mind-independent moral facts.

occurrences of symmetrical patterns or repeated series of coin tosses that generate neat heads-tails-heads-tails-heads-tails ... sequences. As Baras correctly points out, while many allegedly striking facts are facts of patterns, order or correlation, the absence of either of these things may also be striking and call out for explanation in the same sense, depending on what is known (2020, 1505). So – perhaps unsurprisingly – strikingness is relative to some epistemic state, and not an intrinsic property of certain facts. Moreover, that run-of-the-mill examples of ‘striking’ facts ‘call out for explanation’ can be explained by appeal to other, more basic principles that we have independent reason to accept. Hence, there is no need for a general striking principle – beyond the fact that it is needed for certain powerful arguments to go through, but that seems disturbingly *ad hoc*.

Baras discusses strikingness as a completely general property, but I submit that it is more plausibly understood as a local, to some extent context-relative, property. For instance, some facts are especially striking given certain theories. But this actually bolsters the general spirit of Baras’ criticism that with an appeal to strikingness there is typically something underneath that does the work – perhaps different things in different contexts. While elucidating ‘local’ notions of strikingness may be more tractable, we still lack a good account of this in the case of Match – and that is precisely what Team Explanatory Power would need. Notably, they would not be allowed to appeal to specific analyses of epistemological concepts in this motivation, in order to maintain Neutrality.

To be clear, the problem is not that Field’s objection fails to be a knock-down argument. It *is* enough that it, when successful, ‘lowers our credence in platonism’ as Liggins (2010, 74) writes. The problem is that on this view, it is unclear how it can do so as effectively as it is supposed to – as long as we have not seen an account of why Match is an especially bad fact to leave unexplained.

### **3.2. Team Undercutting Defeat**

I turn now to the other strand in the literature with respect to why it is bad if Match is left unexplained. According to Team Undercutting Defeat, if platonists cannot meet the challenge they are committed to accepting that mathematicians’ mathematical beliefs are unjustified because subject to an *undercutting defeater*.

An undercutting defeater for a belief that  $p$  is something which takes away justification from the belief that  $p$ , rather than give a reason to believe not- $p$  (which is what *rebutting* defeaters do). The idea here is that if it appears impossible to explain the fact that our mathematical beliefs reliably tend to be true, that provides a reason to *doubt* the justificatory power of the methods we relied on when forming those beliefs. This takes away whatever prima facie justification we had for mathematical beliefs arrived at by way of those methods. The intended upshot is that if one is committed to a metaphysical theory which precludes any explanation of the reliability of mathematical beliefs, one is committed to the conclusion that mathematical beliefs are no longer justified (see, e.g. Baras 2017; Clarke-Doane 2017; Faraci 2019; Rosen 2001).

Team Undercutting Defeat thus fills out the bare-bones argument along the lines of what we may call DEFEATED:

P1b. All philosophies of mathematics face the challenge to explain Match.

P2b. Assuming platonism, it is impossible to explain Match.

P3b. If it is impossible to explain Match, this is an undercutting defeater for any prima facie justification we have for our mathematical beliefs.

P4b. Assuming platonism, the prima facie justification we have for our mathematical beliefs is undercut (from P2b, P3b).

P5b. If some theory  $T$  implies that the prima facie justification we have for our mathematical beliefs is undercut, this is a reason to reject  $T$ .

C. We have reason to reject platonism.

Initially, it seems that DEFEATED does a good job of securing Force for Field's objection. Presumably, it is a highly undesirable consequence of a metaphysical theory if it implies that we have reason to give up all of our mathematical beliefs.

Unfortunately for Team Undercutting Defeat, Force is here paid for in the coin of Neutrality. If the point of meeting Field's challenge is to avoid undercutting defeat, then what kind of explanation the challenge asks for depends on what would be required to avoid such defeat. That is, the acceptability of P3b turns on substantial epistemological assumptions, in this case about the necessary conditions for epistemic defeat.

But is there reason to extend Neutrality to epistemic defeat? Yes. First, views on undercutting defeat are deeply intertwined with other substantial epistemological assumptions about knowledge and justification. This

is simply because what properties some evidence  $e$  must remove, in order for  $e$  to be an undercutting defeater, depends on what the epistemically relevant properties of a belief are. Of course, views on this also undergird views on what is required for justification, warrant and knowledge. Second, recall that the motivation for Neutrality is dialectical: Field's challenge is supposed to be binding for as many as possible, including platonists, by their own lights. That is why it should not rely on controversial epistemological assumptions. That motivation holds also for undercutting epistemic defeat, since epistemologists disagree about its necessary conditions (see, e.g. contributions in Moretti and Piazza 2018 for a recent discussion). In fact, much of the recent internal debate between those members of Team Undercutting Defeat who think that platonists (and many of their realist counterparts in other domains) can meet Field's challenge and those who think they cannot, has concerned precisely the nature of undercutting defeat. Some, like Clarke-Doane and Baras (Baras 2017; Clarke-Doane 2017; Clarke-Doane and Baras 2021) defend a modal characterisation of undercutting defeat, whereas others, such as Faraci (2019), Klenk (2019, 258) and Tersman (2017, 756–758), suggest that the proper characterisation must be non-modal.<sup>9</sup> This internal disagreement exposes the problem with loss of Neutrality: while *potentially* full of Force, DEFEATED loses its dialectical bite since the platonist may well reject the view on undercutting defeat her opponent takes the challenge to rest on.

#### 4. Tension and UNEXPLANATORY\*

As things stand there is a tension between Neutrality and Force that neither Team has succeeded in reconciling. DEFEATED promises Force by committing platonism to actual mathematical justification being undercut, but can realise this only by violating Neutrality. UNEXPLANATORY preserves Neutrality, but at the cost of lessening the Force of Field's objection as long as it fails to articulate (in a Neutral way) what is so pressing and important about this particular explanatory task.

Another thing conspicuously missing from Team Explanatory Power's story is in what sense the objection is an *epistemological* objection. For Team Undercutting Defeat, in contrast, this is pretty clear: the upshot of the objection is that platonists are committed to a very unattractive

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<sup>9</sup>Often along with, or stemming from, a non-modal characterisation of 'reliability' as the epistemically relevant one.

conclusion about the epistemic status of mathematical beliefs. Indeed, this is where Force comes from, on their view. This suggests that Force is intimately tied to the epistemological flavour of the objection.<sup>10</sup> But it also appears that epistemological flavour is closely connected with violation of Neutrality, which prohibits appeal to contentious epistemological assumptions. One recipe for reconciling the tension would be to secure Force by bringing epistemological flavour back, without violating Neutrality. Such an argument would be superior to both UNEXPLANATORY and DEFEATED with their respective weaknesses.<sup>11</sup> But can that be achieved? I think this is doubtful. I will presently outline a version of the objection which comes as close as possible, and then explain why I worry that it nevertheless fails.

It is highly plausible that the Force commonly attributed to Field's objection is intimately tied to the more or less universally accepted assumption that the reliable correlation between human mathematical belief and mathematical truth, if genuine, is *some form of* epistemic success. That is, it is because Match is an epistemic success that it seems bad if Match cannot be explained. And while we cannot assume anything about the particular nature of this epistemic success on pains of violating Neutrality, we *can* assume that the platonist will want *some* epistemic success gloss or other on Match. A way to catch platonists out would thus be to point out that *no account of Match as an epistemic success* is compatible with platonism.

In other words, Field's objection would then be charging platonists with the claim that *because* they are committed to postulating that Match is a coincidental correlation, there is no epistemology of mathematics available to them, according to which the beliefs involved in Match are epistemic successes. This yields the following modified argument UNEXPLANATORY\*.

P1c. All philosophies of mathematics face the challenge to explain Match as non-coincidental.

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<sup>10</sup>In the case of Field's argument, not generally speaking – there are plenty of powerful arguments that are not epistemological.

<sup>11</sup>Note that I make no exegetical claim about whether this would be The Real incarnation of Field's epistemological objection. In my view, Liggins (2018) convincingly argues that Field's original (1989) presentation is supposed to maintain Neutrality, but clearly (as Liggins also concedes) some of Field's later work (2005) also allows for interpretations closer to that of Team Undercutting Defeat. However, I think it is clear that (a) there is interest, quite independently of exegetical projects, in what the *best* epistemological objection to platonism would be, in terms of both scope and punch; (b) an objection with both Neutrality and Force would be superior to DEFEATED and UNEXPLANATORY; and (c) both properties have regularly been ascribed to Field's epistemological objection, sometimes by members from both Teams.

P2c. Assuming platonism, it is impossible to explain Match as non-coincidental.

P3c. If it is impossible to explain Match as non-coincidental given some theory *T*, then *T* is committed to postulating Match as an unexplained coincidence.

P4c. Platonism is committed to postulating Match as an unexplained coincidence.

P5c. If some theory *T* is committed to postulating Match as an unexplained coincidence, *T* has no way of accounting for the fact that Match is an epistemic success.

P6c. If *T* has no way of accounting for the fact that Match is an epistemic success, we have a reason to reject *T*.

C. We have reason to reject platonism.

UNEXPLANATORY\* is in line with some classical conceptions of what is taken to be the epistemologically at issue with platonism, namely ‘the *very possibility* of natural knowledge of abstract objects’ (Hart 1977, 125–126, my emphasis) and the prospects for *any* ‘explanation of how human beings can acquire knowledge of abstract mathematical objects’ (Balaguer 1995, 304) at all. On the face of it at least, UNEXPLANATORY\* does not violate Neutrality, because it does not rest on any claims about the particular epistemic status of mathematical beliefs, or on how epistemic concepts like knowledge, warrant or undercutting defeat are to be analysed. And UNEXPLANATORY\* clearly secures an epistemological flavour to the objection, which, the hope is, also brings with it Force.

I think it is the closest we can get to reconciling Force and Neutrality. Nevertheless, I have two worries about its tenability. First, while UNEXPLANATORY\* is decidedly an epistemological objection, it is not obvious that it thereby secures Force. It might be suggested that if platonists have *no* way of explaining actual mathematical epistemic success, this is clearly an especially harmful explanatory deficiency that provides a strong reason to reject platonism. But this invites problems familiar from the discussion of UNEXPLANATORY above: why are facts of epistemic success especially important to explain?

This question certainly can be addressed. Team Undercutting Defeat, for instance, might say that if an alleged epistemic success is not explainable in the right way, this undermines prospects for epistemic success (Faraci 2019; Korman and Locke 2020; Lutz 2018). But that is no option if Neutrality is to be maintained, since it relies on particular explanationist

accounts of knowledge and/or justification. And since one does not want to fall back on bare claims of strikingness either, we are still lacking what UNEXPLANATORY lacked: a story to back up such claims. So, my first worry is how the relative importance of explaining Match, which is crucial to securing Force, can be motivated without substantial epistemological assumptions. Again, the tension between Force and Neutrality manifests itself.

My second worry concerns the tenability of P5c. While neutral in the letter, it is not obvious that it can actually be *defended* without appeal to substantial epistemological assumptions. A straightforward way to support a premise like P5c would be to show that unexplainable Match precludes that a necessary condition for (mathematical) knowledge, or some other epistemic success with respect to mathematics. An example of this is Nutting's (2016) careful reconstruction of Benacerraf's argument, which on her interpretation relies on the following two assumptions: First, if we have any mathematical knowledge, at least some of it must be directly (i.e. non-inferentially) acquired through some cognitive faculty. Second, the way such a cognitive faculty links epistemic subjects with mathematical facts must be appropriately causal.<sup>12</sup> Platonism is incompatible with any account of mathematical knowledge, *given these assumptions* – but they clearly violate Neutrality.

Given that Neutrality is motivated dialectically, this may not be problematic if the only assumptions required about the necessary conditions for *any* kind of epistemic success were widely shared and that denying them would mean adopting an extreme or unreasonable epistemological view. But as I will close this paper by suggesting, platonists can question P5c by appealing to views on the epistemic value that are not obviously outrageous but have been defended in print by epistemologists.

To see this, let's start by taking a look at a debate internal to Team Undercutting Defeat. As I mentioned briefly in Section 3.2 above, among those who take DEFEATED to be the proper reconstruction of Field's objection, there is disagreement over whether or not the argument actually goes through. At the centre of this debate is what we may call the trivialising explanation of Match, a move that Clarke-Doane has made much of in recent work (2012, 2014, 2015, 2017). What the trivialising explanation shows is that platonism does not preclude that our true mathematical beliefs are *safe* and *sensitive*, and so is compatible with

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<sup>12</sup>According to Nutting, 'appropriately causal' here rules out all types of non-physical causation (if there are any), as well as a common cause with effects on both human cognition and subject matter known directly (2016, 2144).

any view on which safety and/or sensitivity are necessary conditions for epistemic success. A subject  $S$ 's belief that  $p$  is safe just in case  $S$  is not wrong about whether  $p$  in nearby worlds.  $S$ 's belief that  $p$  is sensitive just in case  $S$  would not believe that  $p$  if not- $p$  were the case. That is, they are both modal properties. I won't spend much time on the details of the trivialising solution, but just state its very basics.<sup>13</sup>

Central to the trivialising explanation is that for any mathematical truth  $p$ , if  $p$  then necessarily,  $p$ . If we are allowed to assume that Match obtains, when  $p$  is a necessary truth, sensitivity is trivially satisfied because there are no worlds in which not- $p$ . As for safety, since there are no worlds (nearby or otherwise) in which not- $p$ , all one needs to make sure, in order for the  $p$ -belief to be safe, is that  $S$  does not believe that not- $p$  in any nearby worlds. Therefore, an ordinary aetiological explanation (if perhaps a complex one) of how we come to have the mathematical beliefs that we do, according to which those beliefs are reasonably modally stable and could not easily have been different – say, because it was an evolutionary advantage to have the ones we actually have – is enough to ensure that actually true mathematical beliefs are safe. Platonism does not preclude any such explanation, and so Match *can* be explained: the reliable belief-side is explained causally, and that the truths are necessarily as they are is explained by platonism.<sup>14</sup>

Now, members of Team Undercutting Defeat all agree that leaving Match unexplained creates an undercutting defeater, but they disagree over whether the trivialising explanation *is* an explanation of Match that deflects this threat. The disagreement here stems from disagreement over the nature of undercutting defeat. And as I also noted above, views on undercutting defeat are closely tied to more foundational epistemological assumptions.

Clarke-Doane and other trivialisers hold that modal properties like safety are highly relevant to the epistemic success of beliefs. Indeed, the view that safety is necessary for knowledge and/or justification is a

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<sup>13</sup>A more detailed exposition can be found in Clarke-Doane (2017), and a clear and efficient recap in Jonas (2017). The basic workings behind this kind of move have been known for a long time (see, e.g. Lewis 1986, 114–115). Clarke-Doane's main contribution is the observation that this is relevant for evolutionary debunking arguments that are especially common in ethics (Joyce 2005; Street 2006).

<sup>14</sup>As Berry (2020, 697) points out, trivialising explanations just replace one coincidence with another. They explain one correlation – Match – in terms of another correlation – between evolutionary optimal mathematical beliefs and the mathematical facts – which seems as coincidental as the original one. For sure, that affects the theoretical economy of platonism, as per UNEXPLAINED. But it does nothing to bolster the crucial premise P5c of UNEXPLAINED\*, which requires also that commitment to coincidence preclude any defensible account of mathematical epistemic success.



view they share with a number of other epistemologists.<sup>15</sup> The epistemic value of safety and the necessity of it for epistemic successes, is easily motivated given the assumption that acquiring true and avoiding false beliefs is a fundamental epistemic good: if true belief is valuable, then reliably securing it is valuable. This view is not controversial. Many epistemologists subscribe to veritism, i.e. the view that truth is the *only* fundamental epistemic good in terms of which all other epistemic goods are to be explained, ultimately (David 2013; Goldman 1986; Pritchard 2014). Assumptions about what is epistemically good clearly influence and motivate accounts of the *nature* of things that are intuitively epistemically valuable, such as knowledge and justification. On such views, the importance and relevance of safety to epistemic success can be expected to be highly significant, and in some cases perhaps sufficient for some kinds of epistemic success. Now, I am not suggesting that epistemologists in general, nor all veritists, hold that safety is sufficient for a specific epistemic success like knowledge.<sup>16</sup> But it is hard, I think, for veritists to deny that Match, given the trivialising explanation, constitute *some* form of epistemic success. This would be enough to show that P5c is false, without outrageous epistemic assumptions.

A different route here might be to endorse the kind of epistemic value pluralism that has been proposed by Axtell and Olson (2009; Olson 2012). On this view, truth is *one* source of epistemic value, in virtue of which beliefs with properties like safety and reliability, and states justified only in a strongly externalist sense count as epistemic successes. But there are other independent sources of epistemic value too, that can explain the (perhaps greater) success of other states like reflective knowledge or understanding. This allows one to acknowledge the epistemic success of, e.g. the externalist favourite, the reliable chicken-sexer, while also acknowledging that the overall epistemic value of this success may be small compared to other states that derive value also from other, independent sources of epistemic value. This can presumably be extended to cover Match, given the trivialising explanation, as an epistemic success of one kind.

I cannot pretend to have argued here that either of these positions would be attractive – for a platonist or more generally. But it does show that there are certainly epistemological assumptions available –

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<sup>15</sup>See, e.g. Williamson (2002), Hirvelä (2019), Whiting (2020).

<sup>16</sup>Clarke-Doane and others who focus on undercutting defeat typically stay neutral on whether anything else, and if so what, is required. Their claims are concerned with necessary conditions only.

and defensible ones too – according to which platonists *can* account for Match as an epistemic success. These accounts and the assumptions on which they would rest, can of course be questioned, or rejected in favour of other assumptions. But all such assumptions would be epistemologically charged and violate Neutrality. Note that my point here is not that UNEXPLANATORY\* is a faulty reconstruction because one of its premises is false. In my view, it is no part of Field’s challenge that it must necessarily succeed (although it is natural for wielders of the argument to seek a construal that plausibly goes through). The point is that P5c likely cannot be made even initially plausible without controversial epistemological assumptions, and so after all, UNEXPLANATORY\* does not embody Neutrality.

## 5. Conclusions

If what I have argued above is correct, we should doubt that there is an epistemological argument along the lines of Field (1989), that has both Force and Neutrality, contrary to what the contemporary literature on the topic suggests. This is an important finding, as the tension between the two properties often goes unnoticed.

What does this imply for the case against platonism in the philosophy of mathematics? Certainly not that it will be smooth sailing for platonists from here on. First, for all I have argued, there might be plenty of perfectly good arguments against platonism, some of them raising epistemological worries. DEFEATED is one candidate, but there are also others appealing to other epistemological assumptions (e.g. Nutting’s 2016 re-interpretation of the Benacerraf problem, mentioned briefly above). What I have argued here is that it is very difficult to translate intuitive worries about platonist epistemology into principles that do not turn on epistemological assumptions that the platonist is under no particular obligation to accept. Second, there are also arguments against platonism that satisfy Neutrality. UNEXPLANATORY is arguably one of them, but as a result, there is little reason to think of it as an ‘epistemological’ objection. But of course, no argument with any force whatsoever will be neutral in all senses. Arguments that satisfy Neutrality draw whatever punch they have from assumptions about other things, such as theoretical economy or the nature of explanation. That is as it should be. All I have been concerned with here is the neutrality with respect to epistemological assumptions that is often ascribed to Field’s argument.

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