Forthcoming in *New Essays on Fitch's Paradox*, (eds.) B. Brogaard & J. Salerno, (Oxford UP).

ANTI-REALISM, FACTIVITY, AND FITCH

Christoph Kelp & Duncan Pritchard

University of Stirling

ABSTRACT. We offer a novel resolution to Fitch's puzzle, one that proceeds by employing a weakened version of the factivity principle for knowledge. We argue that this weakening of factivity is in the spirit of anti-realism and show that by weakening this principle we are thereby able to motivate the weakening of a second principle which is appealed to in Fitch's puzzle—*viz*., the principle that knowledge distributes across conjunctions. With these two principles weakened, one can block Fitch-style reasoning.

1. FITCH'S PUZZLE

It is held to be a central tenet of anti-realism that the truth cannot outstrip our capacity to know it. It is this intuition that underlies the principle of knowability, usually formulated simply as follows:

(KP) $\forall p\,(p \rightarrow \Diamond Kp)$

As Frederic Fitch (1963) has shown, however, it seems that one can use (KP) to derive the rather awkward conclusion that all truths are known. The epistemic confidence at issue in (KP) thus gets converted into the sort of *super* epistemic confidence of omniscience.

Here, in essence, is how the argument proceeds (we've simplified some of the steps so that this moves rather quickly, but nothing hangs on these simplifications). First one assumes, for *reductio*, that one is not omniscient—i.e., that there is some truth (we'll call it 'p') which is unknown:

(1) $p \,\&\, \neg Kp$

Given (KP), however, one can straightforwardly derive (2):

(2) $\Diamond K\,(p \,\&\, \neg Kp)$

An essential feature of Fitch's argument at this point is a sub-argument to the effect that (2) cannot be true. This proceeds by first assuming, for *reductio*, that it is known that there is a

truth (we'll call it 'q') which is unknown:

(3) $K (q \& \neg Kq)$

Plausibly, knowledge distributes across conjunctions, such that if a conjunction is known, then so are both of the conjuncts:

(4) $Kq \& K\neg Kq$

Most will also agree that knowledge is factive, such that if one knows a proposition, then that proposition must be true. We can thus conclude (5):

(5) $Kq \& \neg Kq$

This is, of course, a direct contradiction. Since the assumption of this sub-argument leads to contradiction, we can therefore infer the negation of this assumption:

(6) $\neg K (q \& \neg Kq)$

Moreover, since this result has been derived based on no assumptions, we can also conclude that it is a necessary truth:

(7) $\Box\neg K (q \& \neg Kq)$

Using standard modal logic, however, we can infer (8) from (7):

(8) $\neg\Diamond K (q \& \neg Kq)$

And since what applies to q here will also apply to p, (8) is inconsistent with (2). It therefore follows that the original assumption—that we are non-omniscient—must be denied. The anti-realist principle of knowability, at least when combined with some very basic epistemic and modal logic, is therefore inconsistent with non-omniscience such that if we retain this principle then we must, it seems, accept the absurd conclusion that that all truths are known.[1]

2. FACTIVITY AND FITCH

All manner of defences have been made on behalf of the anti-realist, including the addition of possibly *ad hoc* restrictions on the sorts of propositions that (KP) applies to, and the placing of limits on the use of such principles of epistemic logic as conjunction distribution for knowledge.[2] The proposal that we will be exploring in this paper, however, is one that, so far as we know, no other commentator has seriously considered, most probably because it initially seems quite absurd. In essence, our proposal is that we should consider the prospects of offering an anti-realist resolution to Fitch's puzzle which denies factivity.[3] As we will see, there is a way of pursuing this strategy that is very much in keeping with the spirit of anti-realism and which, properly understood at any rate, is not quite as counterintuitive as one might at first have thought. Moreover, this strategy of denying factivity results in an entirely new motivation for rejecting the standard formulation of conjunction distribution for knowledge. With both factivity and conjunction distribution denied, however, Fitch's puzzle collapses.

To begin with, it is important to note that the proposal is, more precisely, not so much that the factivity of knowledge should be denied outright, but rather that this principle needs to be slightly weakened. Here is factivity again, stated more formally:

(FAC) $\forall p\,(Kp \rightarrow p)$

And here is the alternative principle that we propose:

(FAC*) $\forall p\,(Kp \rightarrow (p \vee \neg\Diamond K\neg p))$

In words, if one knows a proposition then either that proposition is true or it is impossible to know its negation. The modality at issue here is to be read in the same way as we take it the modality is understood in (KP). That is, following Neil Tennant (2000, 828-38), the modal claim in (KP) is that the actual world permits recognition of the truth of the target proposition, not the logically weaker claim that there is a possible world in which the target proposition is known. Similarly, the claim here in the second disjunct is that the actual world does not permit recognition of the truth of the negation of the target proposition.

Before we consider just why the advocacy of such a principle might be in the spirit of anti-realism, it is worthwhile specifying in outline how (FAC*) can enable the anti-realist to

block Fitch's puzzle. On the face of it, the application of (FAC*) to Fitch's puzzle lies in its ability to block the move from line (4) to line (5). By the lights of a view which incorporates (FAC*), the permissible move is not to line (5) but to the logically weaker (5*):

(5*) $Kp \ \& \ (\neg Kp \vee \neg \Diamond K \neg \neg Kp)$

The onus therefore falls on the proponent of Fitch's puzzle to find some way of discharging the second disjunct of the second conjunct.

As we will see, however, there is a relatively straightforward way in which the defender of Fitch can discharge this assumption, and thus the import of replacing (FAC) with (FAC*) does not lie here. Instead, the import lies in how once one replaces (FAC) with (FAC*) then the motivation for endorsing the principle that knowledge distributes across conjunctions—rather than a logically weaker principle—starts to wane. With this logically weaker principle in play, one can block Fitch's puzzle earlier on in the move from line (3) to line (4). So although replacing (FAC) with (FAC*) will not itself resolve the puzzle, it does enable one to motivate the denial of a second principle of epistemic logic in such a way that the strategy is still effective as a response to Fitch.

3. MOTIVATING NON-FACTIVITY WITHIN ANTI-REALISM

There are a number of motivations that one can offer for advocating (FAC*) as a condition on knowledge rather than (FAC). One such motivation comes from considerations regarding the ethics of theory choice. It is a common feature of discussions between proponents of different philosophical views that one of the parties will contend that their position has a dialectical advantage over the competition because of its ability to accommodate the relevant philosophical data within a logically weaker theory. Anti-realists often make this claim in their debate with realists, for example, contending that the intuitionistic logic to which their view is affiliated is logically weaker than the classical logic to which realism is affiliated, and thus that it is incumbent upon the realist to offer grounds for preferring the logically stronger view over the weaker view. That is, intuitionists want to know which deeply held philosophical intuition is being rescued by the appeal to classical logic that cannot be accommodated (albeit perhaps in a different way) within an intuitionist logic? In short, the

claim is that the burden of proof is on the realist in this debate rather than the anti-realist, with the anti-realist occupying, as it were, the 'default' position.[4]

Similar debates occur in epistemology, though here the claim is usually that, *ceteris paribus*, with one should prefer theories of knowledge that have a logically weaker conception of the epistemic condition—that is, the condition (or conditions) which, with true belief, make up knowledge. That is, if two theories are equally able to capture our deepest intuitions about knowledge, but one of them is logically weaker than the other, then we should prefer the logically weaker theory.

Such a methodology for assessing epistemological theories has been described by Patrick Greenough (2002) as "minimalist epistemology". Once one starts to take this minimalist programme seriously, however, then the natural question arises as to whether we need even an epistemic condition, or, for that matter, whether we need the truth and belief conditions in their current forms. This more radical minimalist programme has been described by Duncan Pritchard (2004) as "epistemic deflationism", in that the point of proposals of this sort is that we need to 'deflate' the philosophical conception of knowledge down to its barest essentials—taking nothing for granted—and then request specific grounds for each subsequent 'inflation' of this conception.[5]

The issue raised here regarding the status of (FAC)—essentially, regarding the status of the truth condition for knowledge—can be located within this deflationary programme. If there is a logically weaker condition which can do all the work that we would normally expect of the truth condition, then any proposal which incorporates the weaker principle would be at a dialectical advantage relative to those proposals which continue to incorporate (FAC).

As we noted above, for a wide range of cases there will be no discernible difference between (FAC*) and (FAC). In particular, this principle will obviously be inconsistent with cases of knowledge which concern propositions which we *know* are not true, and so at least one awkward consequence of rejecting (FAC) is avoided. That is, while this principle is apparently consistent with there being knowledge of propositions which are not true—though, as we will see below, it is not even clear that this is the case—it is not consistent with there being knowledge of propositions which we know are not true.

Moreover, it will typically be the case that if a proposition is such that if we can determine on *a priori* grounds that it is impossible to know its negation, then this will be

because it is a proposition of a sort such that both it *and* its negation are unknowable. For these cases, then, we won't have instances of knowledge of propositions which are not true for the simple reason that the very fact which makes the second disjunct of the relevant instance of (FAC*) true will also ensure that the agent concerned fails to meet one of the other conditions placed on knowledge as well, and thus fails to know the target proposition.

In any case, if one allies (FAC*) to an anti-realist principle like (KP), then such cases of unknowable propositions drop out of consideration anyway. In order to see this point, consider the second disjunct of the consequent of (FAC*). This says that it is impossible to know the negation of the target proposition. Given (KP), however, this means that it is not the case that the target proposition is untrue. That is, given (KP), (FAC*) entails the following principle:

(FAC**) $\forall p\,(Kp \rightarrow (p \vee \neg\neg p))$

Within an intuitionistic logic which does not incorporate double negation equivalence (DNE), the disjunction in the consequent of (FAC**) is not trivially true. In effect, what (FAC**) says is that if one knows a proposition then either that proposition is true or it is not untrue. Either way, this will be inconsistent with the truth of the negation of the target proposition, which means that properly understood (FAC*), when squarely located within the anti-realist programme, will not be consistent with knowledge of untruths after all. This further supports the claim that, for the anti-realist at least, denying (FAC) in favour of (FAC*) will not have the disastrous consequences that one might have initially supposed it to have. In particular, a logically weaker theory of knowledge which incorporated (FAC*) rather than (FAC) would (at least if allied to anti-realism) still be able to capture our deep intuition that one cannot know falsehoods.

It is important to recognise just why the anti-realist reading of (FAC*)—i.e., (FAC**)—does not allow for knowledge of untruths. For the anti-realist, if it is indeed impossible to know that a proposition is true, then that is just to say that *isn't* true. As noted at the beginning of this paper, the driving intuition behind the anti-realist project is that we should not allow a notion of truth that outstrips our capacity to know it. Nevertheless, (FAC**) is logically weaker than (FAC), and thus it holds out the hope of being able to play a role within a deflationary epistemology that enables the anti-realist to avoid Fitch's puzzle.

There is also a further sense in which combining (FAC*) with (KP) to get (FAC**)

highlights why denying (FAC) need have no awkward consequences if the denial is set within the anti-realist programme. This concerns the fact that while intuitionists reject (DNE), they do accept the following double negation introduction (DNI) principle:

(DNI) $\forall p\,(p \rightarrow \neg\neg p)$

Moreover, given that intuitionists also accept contraposition, it follows that they will in addition accept this restricted double negation elimination principle which specifically concerns triple negations:

(DNE*) $\forall p\,(\neg\neg\neg p \rightarrow \neg p)$

The significance of this point is that given (DNE*) the logical difference between (FAC**) and (FAC) disappears when it comes to knowledge of the negations of propositions. In such cases, (FAC**) will license the inference from knowledge of $\neg p$ to the disjunction, either $\neg p$ or $\neg\neg\neg p$. Granted (DNE*), however, the triple negation in the second disjunct will collapse and so the disjunction will become trivial. If one knows $\neg p$ then, given (DNE*), one can infer $\neg p$, even by the lights of (FAC**). Again, then, we see that the logical differences between (FAC) and (FAC**), at least when set within the anti-realist programme, are slim indeed.

Notice that this point is important for our claim that replacing (FAC) with (FAC**) will enable one to meet Fitch's puzzle, since it highlights why the thesis here cannot just be that one objects to the (FAC)-based inference from line (4) to line (5). We noted above that by the lights of (FAC*), all that one will be able to infer here is (5*):

(5*) $Kp \,\&\, (\neg Kp \vee \neg\Diamond K\neg\neg Kp)$

Given (KP), however, and thus (FAC**), it follows that one can instead go straight from line (4) to line (5**):

(5**) $Kp \,\&\, (\neg Kp \vee \neg\neg\neg Kp)$

Crucially, however, as we have just seen, this triple negation will collapse into a single negation, even within an intuitionistic logic, and thus one will be able to derive line (5) of the Fitch puzzle anyway, even without having to appeal to (FAC). It is thus vital that there is more to the proposal than simply replacing (FAC) with the logically weaker principle.

Instead, one needs to further show that the move to (FAC**) has ramifications for other aspects of the Fitch argument.

4. NON-FACTIVITY AND KNOWLEDGE DISTRIBUTION ACROSS CONJUNCTIONS

As we noted above, it is central to the proposal under consideration not just that (FAC) should be replaced by the weaker (FAC**), but also that such a replacement has ramifications for other elements of the argument offered by Fitch. In particular, the claim is that the move to (FAC**) also undermines Fitch's appeal to a second principle of epistemic logic—the claim that knowledge distributes across conjunctions. Moreover, although others—most notably Robert Nozick (1981)—have denied this principle, no-one has denied it on this basis, which means that this way of dealing with Fitch's puzzle is entirely novel.

We can express the principle that knowledge distributes across conjunctions as follows:

(CON) $\forall p \forall q (K (p \& q) \rightarrow (Kp \& Kq))$

The reason why someone who rejects (FAC) ought to be suspicious of (CON) lies in the fact that the motivation for this principle seems to rest on a prior commitment to (FAC).

In order to see this, reflect that on the standard construal of knowledge which licenses (FAC), a pre-condition of being able to know a proposition is that the proposition in question is true. If this is right, however, then a precondition of (CON) being at all plausible is that knowledge of the conjunction should entail the truth of each of the conjuncts, since if the conjuncts are not true, then they are not in the market for knowledge in the first place. Accordingly, a commitment to (FAC) seems to be implicit in the motivation for adopting a principle like (CON).[6]

In contrast, if one is not already convinced by (FAC), then it is not obvious that one should endorse (CON) rather than a logically weaker principle which presupposes only (FAC**). Given (FAC**), the natural way to understand this logically weaker principle would be as something like (CON*):

(CON*) $\forall p \forall q (K (p \& q) \rightarrow (K (p \vee \neg \neg (p \& q)) \& K (q \vee \neg \neg (p \& q)))$

After all, (FAC**) when applied to K (p & q) will only give you (p & q) v ¬¬(p & q), which is equivalent to (p v ¬¬(p & q)) & (q v ¬¬(p & q)). Accordingly, if knowledge distributes across conjunctions at all then, given only (FAC**), one would expect it to distribute to this more complex version of the original conjunction.[7]

With (CON*) in mind, let us return to Fitch's puzzle and see how this affects the argument. Recall that the problematic move is from line (3) to line (4):

(3) K (q & ¬Kq)
(4) Kq & K¬Kq

As we saw above, even with the logically weaker (FAC**) in play, line (4) can still be converted, eventually at least, into the problematic line (5), and the rest of the argument then proceeds as normal.

With (CON*) in play rather than (CON), however, the permissible move in this regard is only from line (3) to line (4*):

(4*) K (q v ¬¬(q & ¬Kq)) & K (¬Kq v ¬¬(q & ¬Kq))

Notice, however, that there is now no straightforward way to get from line (4*) to line (5) in the original argument, and hence the standard formulation of this argument is at least blocked.

How might the defender of Fitch's argument go about resurrecting the puzzle? To derive the usual contradiction would mean somehow finding a way to derive Kq and K¬Kq from, respectively, the first and second conjuncts of line (4*). To do this would require discharging the relevant disjuncts in line (4*), and what is needed to do this is the assumption that one *knows* that the relevant disjunct is false (rather than simply the assumption that the relevant disjunct is false).[8] That is, one would need to introduce the following assumption:

(4**) K¬(q & ¬Kq))

The problem with incorporating this assumption into the argument, however, is that it would enable the anti-realist to claim that the moral of Fitch's sub-argument is simply that *one* of the assumptions, whether that at issue in line (3) or that at issue in line (4**), is false. Put another way, if the assumption at line (3) is true, then the assumption at line (4**) is not true. This would give us the alternative line (6):

(6*) $K(q \,\&\, \neg Kq) \rightarrow \neg K \neg (q \,\&\, \neg Kq))$

There is no obvious reason why the anti-realist who endorses (FAC**) should be at all concerned by the claim at issue in line (6*), however, and neither is it clear how the proponent of Fitch's puzzle is to motivate the critical move from line (6*) to line (6) in the original formulation of the puzzle. Indeed, the proponent of Fitch would only get line (6) provided that $K \neg (q \,\&\, \neg Kq)$ is true. The problem is, however, that this claim is (intuitionistically) equivalent to $K \neg \neg (q \rightarrow Kq)$ which in effect states that we know that omniscience is not untrue. However, we clearly do not know that.

As matters stand, then, this way of resurrecting the puzzle in the light of the replacement of (FAC) and (CON) with (FAC**) and (CON*) is not viable. The burden is thus back on the defender of Fitch's puzzle to explain how one should proceed.[9]

5. FITCH'S PUZZLE WITHOUT FACTIVITY

One very natural response that one might offer to the foregoing is that it is all by-the-by given that there are versions of Fitch's puzzle in the literature that make no use of a putatively factive epistemic operator like knowledge, and which thus can't be thought to depend on (FAC) or (CON) at all. On the face of it, then, these versions of the puzzle would be immune to the strategy we offer here. In this section we explore two prominent versions of this alternative formulation of Fitch's argument in order to see what challenge they pose for our solution to Fitch's puzzle.

Suppose that one formulated Fitch's argument using the operator 'It is reasonable to believe that p', or 'It is (epistemically) rational to believe that p'. In neither case is it obvious that such operators are factive—indeed, one would intuitively expect them not to be. Take 'RBp' to say that it is reasonable/rational to believe that p (we will not concern ourselves with possible cases in which reasonableness and epistemic rationality come apart). With this operator in mind—and with the further claim that reasonableness/rationality is a necessary condition for knowledge—we can offer the following Fitch-style reasoning.

First, we will assume that there is a proposition (we'll call it 'p') which is both true and yet which is such that it would not be reasonable/rational to believe it:

(1) $p \ \& \ \neg RBp$

Given (KP), it follows that it must be possible to know this claim:

(2) $\Diamond K (p \ \& \ \neg RBp)$

If reasonableness/rationality is a necessary condition for knowledge, then it follows that it must be possible to reasonably/rationally believe this proposition:

(3) $\Diamond RB (p \ \& \ \neg RBp)$

The sub-argument now concerns whether this really is possible. First, we assume a case in which it is reasonable/rational to believe that there is a proposition (we'll call it 'q') which is both true and which is such that it would not be reasonable/rational to believe it:

(4) $RB (q \ \& \ \neg RBq)$

If reasonableness/rationality distributes across conjunctions, then we can derive line (5):

(5) $RBq \ \& \ RB\neg RBq$

It seems, however, that if it is reasonable/rational to believe that it is not reasonable/rational to believe q, then it would not be reasonable/rational to believe q. We thus get line (6):

(6) $RBq \ \& \ \neg RBq$

With the contradiction in place we need to deny the initial assumption of this sub-argument:

(7) $\neg RB (q \ \& \ \neg RBq)$

Since line (7) rests on no assumptions, it follows that it is necessarily true:

(8) $\Box\neg RB (q \ \& \ \neg RBq)$

Given the kind of elementary modal logic appealed to in the original formulation of Fitch's puzzle, however, we can derive line (9):

(9) $\neg\Diamond RB (q \ \& \ \neg RBq)$

We now have a contradiction between lines (3) and (9), however. It therefore follows, it seems, that the original assumption of non-omniscience (applied to reasonable/rational belief)

must be denied, and hence we get the same problems as we saw the original formulation of Fitch's puzzle generating. In particular, it seems to follow that all truths are reasonably/rationally believed, which is almost as bad (if not worse) as the claim that they are all known.

There are several elements of this argument that the anti-realist can dispute, however. We will focus here on three key problems.

To begin with, it is far from obvious that reasonableness/rationality is necessary for knowledge. In particular, while epistemic internalists might hold to such a necessity claim, epistemic externalists often reject such a thesis. After all, one might meet all the relevant epistemic conditions for knowledge on the externalist account—for example, one might have formed one's true belief as a result of a highly reliable cognitive process—and yet one might have no good reason at all for believing what one does. In such cases, then, one would have knowledge by externalist lights even while having a belief which, on any plausible reading of rationality or reasonableness, is neither reasonable nor rational.

Of course, it may be that anti-realism is somehow essentially tied to epistemic internalism, and if this is right then this objection is neither here nor there.[10] This, however, is a further substantive issue, and we take no view on it here. Without this necessity claim, however, the crucial move from lines (2) to (3) is blocked, and, with it, the argument as a whole.

The second cause for concern relates to the employment of the principle that reasonableness/rationality distributes across conjunctions which is employed in the move from lines (4) to (5). Given that, as we have seen, the more robust knowledge epistemic operator does not distribute across conjunctions, we ought to be very suspicious of this inference. After all, since reasonableness/rationality is non-factive, one can hardly motivate this principle on the grounds that if it is reasonable to believe a conjunction then both conjuncts of that conjunction must be true. Moreover, intuitively it ought to be possible for there to be cases in which it is reasonable/rational to believe a conjunction where it would not be reasonable/rational to believe either of the conjuncts in isolation. Such cases might concern inferences to the best explanation, where the two conjuncts are mutually supporting.

Suppose one is investigating a murder, for example. Given the evidence one is presented with, it might be reasonable/rational to believe that it was the butler who committed the murder and that the murder took place in the dining room, even though it

would not be reasonable/rational to believe either of these propositions alone. After all, it could be that on the supposition that the butler didn't do it then it wouldn't be plausible to suppose that the murder took place in the dining room (but the pantry instead, say), and on the supposition that the murder didn't take place in the dining room it could be that it wouldn't be any longer plausible to suppose that the butler did it (but rather the maid, say). More thus needs to be said to motivate the employment of this principle in the above argument.

The final cause for concern lies in the move from lines (5) to (6), which effectively mirrors the (FAC)-based move in the original formulation of Fitch's puzzle. Given that the reasonable/rational operator is not factive, it is not clear just why this move should be accepted. Could it not be possible that it is reasonable/rational to believe that a certain belief is not reasonable/rational, without the target belief thereby being not reasonable/rational? It seems that the operator here is being illicitly 'beefed-up' so that it can achieve its intended purpose. At the very least, further grounds are required to motivate this inference.

Similar problem afflict an alternative version of Fitch's puzzle which makes appeal to the non-factive 'believes that p' operator. First, we will assume that there is a proposition (we'll call it 'p') which is both true and yet which is such that one does not believe it:

(1) $p \,\&\, \neg Bp$

Given (KP), it follows that it must be possible to know this claim:

(2) $\Diamond K\,(p \,\&\, \neg Bp)$

If belief is a necessary condition for knowledge, then it follows that it must be possible to believe this proposition:

(3) $\Diamond B\,(p \,\&\, \neg Bp)$

The sub-argument now concerns whether this really is possible. First, we assume a case in which one believes that there is a proposition (we'll call it 'q') which is both true and which is such that one does not believe it:

(4) $B\,(q \,\&\, \neg Bq)$

If belief distributes across conjunctions, then we can derive line (5):

(5) $Bq \,\&\, B\neg Bq$

It seems, however, that if one believes that one disbelieves a proposition, then this means that one disbelieves that proposition. We can thus infer line (6):

(6) $Bq \,\&\, \neg Bq$

With this contradiction in place we need to deny the initial assumption of this sub-argument:

(7) $\neg B\,(q \,\&\, \neg Bq)$

Since line (7) rests on no assumptions, it follows that it is necessarily true:

(8) $\Box\neg B\,(q \,\&\, \neg Bq)$

But given the kind of elementary modal logic appealed to in the original formulation of Fitch's puzzle, however, we can derive line (9):

(9) $\neg\Diamond B\,(q \,\&\, \neg Bq)$

We now have a contradiction between lines (3) and (9), however. It therefore follows, it seems, that the original assumption must be denied, and hence we get a similar problem to that which we saw the original formulation of Fitch's puzzle generating. In particular, it seems to follow that all truths are believed, which is almost as bad (if not worse) as the claim that they are all known.[11]

Again, there are a number of *prima facie* problems with this explicitly non-factive formulation of Fitch-style reasoning. We earlier raised three objections against the non-factive formulation of Fitch-style reasoning that employed the reasonableness/rationality operator—*viz*., that reasonableness/rationality is not necessary for knowledge; that reasonableness/rationality does not distribute across conjunctions; and that it does not follow from the fact that it is reasonable/rational to believe that it is not reasonable/rational to believe a certain proposition that it is not reasonable/rational to believe that proposition. Of these, the analogue of the first is not plausible here, since it does seem highly intuitive that belief is necessary for knowledge, but analogues of the other two objections are plausible.

For example, it is at least contentious that belief distributes across conjunctions, and if this principle doesn't hold then the move from lines (4) to (5) is blocked. Why should it

follow from the fact that one believes a conjunction that one thereby believes each of the conjuncts? Indeed, take the example of the murder investigation cited above as a case in point. Given the evidence one is presented with, one might believe that it was the butler who committed the murder and that the murder took place in the dining room, even though one would not believe either of these propositions alone. After all, it could be that on the supposition that the butler didn't do it then it wouldn't be plausible to suppose that the murder took place in the dining room (but the pantry instead, say), and on the supposition that the murder didn't take place in the dining room it could be that it wouldn't be any longer plausible to suppose that the butler did it (but rather the maid, say). More thus needs to be said to motivate the employment of this principle in the above argument.

Moreover, it is also contentious to suppose that belief is transparent to the extent that if one believes that one disbelieves a proposition, then one thereby disbelieves that proposition, and if this transparency thesis is rejected then the move from lines (5) to (6) is blocked. Couldn't the nature of one's first-order belief be sometimes opaque to one, such that one believes that one disbelieves a proposition when in fact one does believe the target proposition? It certainly seems possible for one to be in error about whether or not one believes a proposition. For example, one might confuse one's sincere hope that one's friend is loyal with a belief that he is loyal, when one's subsequent mistrusting behaviour in one's dealings with one's friend makes it clear that one believes no such thing. If this is possible, however, then why cannot such error extend to cases which concern second-order beliefs about what one disbelieves?

Given these independent grounds for doubt regarding this non-factive formulation of Fitch's argument, the burden of proof is back on the proponent of Fitch's puzzle to account for why the anti-realist cannot appeal to the logically weaker (FAC**), and thus the logically weaker (CON*), to meet the standard version of Fitch's puzzle while effectively ignoring those formulations of the puzzle that employ non-factive operators.[12]

REFERENCES

Brogaard, B., & Salerno, J. (2002). 'Clues to the Paradoxes of Knowability: Reply to Dummett and Tennant', *Analysis* 62, 143-150.

——— (2004). 'Fitch's Paradox of Knowability', *Stanford Encyclopædia of Philosophy*, (ed.) E. N. Zalta, http://www.seop.leeds.ac.uk/entries/fitch-paradox/.

DeVidi, D., & Kenyon, T. (2003). 'Analogues of Knowability', *Australasian Journal of Philosophy* 81, 481-95.

Dummett, M. (2001). 'Victor's Error', *Analysis* 61, 1-2.

Edgington, D. (1985). 'The Paradox of Knowability', *Mind* 94, 557-68.

Fara, M. (2005). 'The Paradox of Believability', *manuscript*.

Fitch, F. (1963). 'A Logical Analysis of Some Value Concepts', *The Journal of Symbolic Logic* 28, 135-42.

Foley, R. (*forthcoming*). 'What Must be Added to True Beliefs in Order to Have Knowledge? Answer: More True Beliefs', *Philosophy and Phenomenological Research*.

Greenough, P. (2002). *Knowledge, Lies and Vagueness: A Minimalist Treatment*, Ph.D. dissertation, University of St. Andrews, St. Andrews, Scotland.

Hand, M. (2003). 'Knowability and Epistemic Truth', *Australasian Journal of Philosophy* 81, 216-28.

Hand, M., & Kvanvig, J. (1999). 'Tennant on Knowability', *Australasian Journal of Philosophy* 77, 422-28.

Kelp, C. (2005). 'A Puzzle About Factivity and Closure', *manuscript*.

Mackie, J. L. (1980). 'Truth and Knowability', *Analysis* 40, 90-2.

Nozick, R. (1981). *Philosophical Explanations*, Oxford: Oxford University Press.

O'Grady, P. (2002). *Relativism*, London: Acumen.

Papineau, D. (1993). *Philosophical Naturalism*, Oxford: Blackwell.

Pritchard, D. H. (2004). 'Epistemic Deflationism', *The Southern Journal of Philosophy* 42, 103-34.

Rosenkranz, S. (2004). 'Fitch Back in Action Again?', *Analysis* 64, 67-71.

Sartwell, C. (1991). 'Knowledge is Merely True Belief', *American Philosophical Quarterly* 28, 157-66.

——— (1992). 'Why Knowledge is Merely True Belief', *The Journal of Philosophy* 89, 167-80.

Tennant, N. (1997). *The Taming of the True*, Clarendon Press: Oxford.

——— (2000). 'Anti-Realist Apriorias', *Mind* 109, 825-54.

——— (2001*a*). 'Is Every Truth Knowable? Reply to Williamson', *Ratio* 14, 263-80.

——— (2001*b*). 'Is Every Truth Knowable? Reply to Hand and Kvanvig', *Australasian Journal of Philosophy* 79, 107-13.

——— (2002). 'Victor Vanquished', *Analysis* 62, 135-42.

Williams, M. (1991). *Unnatural Doubts: Epistemological Realism and the Basis of Scepticism,* Blackwell: Oxford.

Williamson, T. (1982). 'Intuitionism Disproved?' *Analysis* 42, 203-7.

——— (1988). 'Knowability and Constructivism', *Philosophical Quarterly* 38, 422-32.

——— (1992). 'On Intuitionistic Modal Epistemic Logic', *Journal of Philosophical Logic* 21, 63-89.

——— (1993). 'Verificationism and Non-Distributive Knowledge', *Australasian Journal of Philosophy* 71, 78-86.

——— (2000). 'Tennant on Knowable Truth', *Ratio* 13, 99-114.
Wright, C. (1993). *Realism, Meaning and Truth*, Blackwell: Oxford.
——— (1994). *Truth and Objectivity*, Harvard University Press: Cambridge, Massachusetts.
——— (2000). 'Truth as Sort of Epistemic: Putnam's Peregrinations', *Journal of Philosophy* 97, 335-64.

NOTES

[1] See Williamson (1988; 1992) for an argument to the effect that the conclusion just canvassed—that all truths are known—will not follow within intuitionistic logic from Fitch's reasoning, even though it does follow that non-omniscience is false. For an excellent overview of the debate regarding Fitch's puzzle, see Brogaard & Salerno (2004).

[2] See Tennant (1997, chapter 8) and Dummett (2001) for proposals which limit the application of (KP). The charge that such limitations are *ad hoc* is explored in Hand & Kvanvig (1999; cf. Tennant 2001*b*); Tennant (2002); DeVidi & Kenyon (2003); and Hand (2003). Note that even if the restriction is principled, further problems will remain. See, for example, Williamson (2000; cf. Tennant 2001a) and Brogaard & Salerno (2002; cf. Rosenkranz 2004). Nozick (1981) famously denied conjunction distribution for knowledge. See Williamson (1993) for a version of the puzzle that does not require this principle.

[3] A related reason why the denial of factivity might not have been seriously considered as a possible response to Fitch's puzzle is the widespread belief that there are versions of Fitch's puzzle that employ non-factive operators such as 'It is rationally believed that'. See, for example, Mackie (1980, 92); Edgington (1985: 558-9); Tennant (1997, 252-9); and Wright (2000, 357). We consider these non-factive versions of the puzzle below.

[4] Perhaps the most trenchant defender of the default status of anti-realism is Wright. See Wright (1993, introduction; 1994).

[5] Williams (1991) was the first to explicitly offer a deflationary conception of knowledge, although he did not set this thesis within a specific methodology. For two recent versions of epistemic deflationism, see Sartwell (1991; 1992) and Foley (*forthcoming*) on the issue of whether we need an epistemic condition on knowledge.

[6] A related reason to be suspicious about (CON) given prior doubts about (FAC) is that (CON) can be shown to be a theorem of (FAC) and the closure principle for knowledge (which states, roughly, that if one knows one proposition, and one knows that this proposition entails a second proposition, then one knows the second proposition). See Kelp (2005) for the proof. Since we do not wish to get into issues concerning the status of closure, however, we will not be considering this further issue here.

[7] Notice that we are not here endorsing (CON*), nor even saying that given only (FAC**) one is committed to (CON*). The claim is, rather, that (CON*) seems to be the most obvious construal of the principle that knowledge distributes across conjunctions given that one only appeals to (FAC**). This is consistent with there being alternative ways of specifying this weakened principle, but if we can show that the most obvious way of spelling-out this principle blocks the Fitch puzzle, then this suffices to put the burden back on the defender of Fitch to identify what these alternative construals of the principle are and show that the alternative readings can be employed in the Fitch puzzle.

[8] Remember that one cannot assume (FAC) here. If one could, then it would follow from one's knowledge of the disjunction that the disjunction was true. Hence, the fact that one of the two disjuncts is false would license the inference to the claim that it is the *other* disjunct that is known. Without (FAC), however, this move is unavailable, and thus knowledge of the false disjunct is required to support the inference.

[9] One might naturally wonder why the appeal to (FAC**) is needed to resolve Fitch's puzzle given that intuitionism is also being appealed to here. After all (and as pointed out above in footnote 1), it is plausible to hold, with Williamson (1988; 1992) *et al*, that one can block Fitch's puzzle by appeal to intuitionism alone. That is, the real problem posed by Fitch arises out of that fact that the denial of the assumption at line (1) seems to imply the absurd claim that all truths are known. That there is no truth which is both true and unknown only intuitionistically entails that all truths are not unknown, however, and it is not obvious that *this* claim is absurd. Although there is this intuitionist response to Fitch's puzzle available, we take it that such a manœuvre is at least uncomfortable, and thus that it would be better if the puzzle could be blocked before one even got to this stage. If we are right about factivity, then just such a prior resolution is available. Moreover, given the considerations regarding epistemic minimalism noted earlier, there are grounds for preferring a theory of

knowledge which incorporates (FAC**) over (FAC). Accordingly, the intuitionist would be wise to understand knowledge along these logically weaker lines and resolve Fitch's puzzle that way, rather than letting the main essentials of the puzzle stand and querying what exactly follows from the puzzle as it is usually understood.

[10] There is, oddly, very little in the literature regarding this issue. For some general discussion of the relationship between the realism/anti-realism debate and the externalism/internalism debate in epistemology, see Papineau (1993, §§6.1-2) and O'Grady (2002, 38-43, 101-4).

[11] For a recent discussion of this formulation of Fitch-style reasoning, see Fara (2005).

[12] We are grateful to Tony Brueckner, Laurence Goldstein, Patrick Greenough, Allan Hazlett, Stephen Maitzen, Alan Millar, Paul O'Grady, David Papineau, Sven Rosenkranz, and Peter Sullivan. Special thanks go to the editors of this volume, Berit Brogaard and Joe Salerno, for their extremely useful and detailed comments on an earlier version of this paper.