

The mystery of the disappearing diamond

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Introduction: two puzzles

The proof now often known as the ‘paradox of knowability’ was originally formulated in print by Fitch in his 1963 (and previously suggested to him by Church in a referee's report--see Salerno, this volume). It presents a challenge to a claim which is commonly associated with certain forms of global anti--realism. ‘Global anti--realists’, as I use the term, are those who are sympathetic to some version of the claim that reality, in its entirety, is dependent in some significant way upon ourselves (usually upon our minds and our ways of thinking). This sort of world view often gives rise to the thought that, because of its mind--dependent nature, all of reality is *epistemically accessible* to us. And this thought in turn is often taken to amount to the claim that all true propositions are knowable.

The Church--Fitch argument purports to show that, provided we accept only a couple of uncontroversial principles about knowledge, the claim that all true propositions are knowable commits one to the apparently much stronger claim that all true propositions are known. This (for all but the most extreme) is an obviously undesirable consequence.

As is customary, in this discussion I shall use ‘Kp’ to mean ‘It is known by some being at some time that p’, hiding the two existential quantifiers. I shall begin by presenting what I think is the clearest exposition of the paradox argument, that

found in Williamson 2000 (except that, for the sake of simplicity of presentation, where Williamson uses quantification over propositions I shall use schematic letters 'p', 'q' etc. to stand for arbitrary propositions).

The argument relies on the factivity of knowledge:

FACT: $\Box(Kp \supset p)$

and the claim that knowledge necessarily distributes over conjunction:

DIST: $\Box(K(p \ \& \ q) \supset (Kp \ \& \ Kq))$

to show that what Williamson calls 'weak verificationism':

WVER: $(p \supset \Diamond Kp)$

entails what he calls 'strong verificationism':

SVER: $(p \supset Kp)$.

The argument runs:

- | | |
|---|-------------------|
| (1) $\Box(K(\neg Kp) \supset \neg Kp)$ | by FACT |
| (2) $\Box(K(p \ \& \ \neg Kp) \supset (Kp \ \& \ K(\neg Kp)))$ | by DIST |
| (3) $\Box \neg K(p \ \& \ \neg Kp)$ | from (1) and (2) |
| (4) $\neg \Diamond K(p \ \& \ \neg Kp)$ | equivalent to (3) |
| (5) $((p \ \& \ \neg Kp) \supset \Diamond K(p \ \& \ \neg Kp))$ | by WVER |
| (6) $\neg(p \ \& \ \neg Kp)$ | from (4) and (5) |

Note that the only things we rely upon in order to derive (6) are WVER and the uncontroversial principles FACT and DIST. Of course, (6) isn't quite the same as SVER, but SVER is a trivial consequence of (6) in classical logic. And rejecting classical logic in favour of intuitionistic logic won't help us much, because it is worrying enough for defenders of WVER if it commits you to (6), the claim that no true proposition is unknown. Other, more radical, departures from classical logic could be used to block the reasoning in one way or another¹. For current purposes,

however, I shall assume that more conservative approaches are to be preferred where available.

Two interesting sets of questions have been raised in connection with the Church--Fitch argument. One familiar set, which I shall call 'the Classic Puzzle', concerns the relevance of the argument to the question of whether global anti--realism is true. It might be tempting to regard the argument as a straightforward refutation of that doctrine. But even those who (like myself) are inimical to global anti--realism tend to feel that such an easy victory is a bit cheap. It seems unlikely that the deep issues which divide the realist and the anti--realist can be settled by a six--line proof. Questions which I take to form part of the Classic Puzzle, and which have received a good deal of attention in the literature, include:

- Does the Church--Fitch argument really refute global anti--realism?
- If it does not, is this because the argument is fallacious, or because anti--realists are not in fact committed to WVER?
- If anti--realists are not committed to WVER, how *should* their doctrine of epistemic accessibility be expressed?

Although I think all these questions are important and interesting, in this paper I shall be primarily concerned to address a second set of questions, of which Jonathan Kvanvig (2006 and this volume) has recently stressed the importance. According to Kvanvig, the preoccupation with the relevance of the Church--Fitch proof to anti--realism has lead philosophers to neglect the fact that, regardless of whether one is an anti--realist or not, there is something deeply surprising about the fact that SVER follows from the apparently weaker WVER. There is a sort of modal collapse: the diamond in WVER just disappears by the time we get to SVER. This is the 'mystery

of the disappearing diamond' of my title. I take the following questions to belong to the second set, which I shall refer to as 'the New Puzzle':

- Does this apparent modal collapse really occur?
- If it does not, where does the Church--Fitch proof go wrong?
- If it does, what satisfying explanation can we give of this collapse?

(Note that, although there is some overlap between the questions in the first set and those in the second, the focal points of the two enquiries are rather different.)

I am inclined to think that the best response to the Classic Puzzle is that anti--realists are not (or at least should not be) committed to WVER. At worst, they might be committed in virtue of their epistemimc accessibility thesis to a different modal claim, one which does not commit them to SVER. In the next section, I shall outline my take on the Classic Puzzle. In the remainder of the paper, I shall try to get clear about what exactly the New Puzzle is and how (if at all) we can solve it. Although I shall begin by *adding* a question to the set which comprises the New Puzzle, I shall eventually propose that my favoured response to the Classic Puzzle provides resources for addressing the New Puzzle too.

Change--the--class and change--the--claim²

One classic response to the Classic Puzzle is to adopt what's sometimes known as a 'restriction strategy'. (The name must be used with some caution, for reasons to be described shortly.) That is, to somehow reformulate the epistemic accessibility claim of the anti--realist so that it does not share the undesirable consequences of WVER. A common way of doing this is to say that not *all* true propositions are supposed by the anti--realist to be knowable, but only some. ('Restriction strategy' is a good name for these views.) Tennant (1997, chapter 8), for instance, has suggested that what anti-

-realists should say is that for every true proposition p such that it is consistent to assume that p is known, p is knowable. This prevents the anti--realist having to accept line (5) of the above proof. Dummett (2001) argues that anti--realists should say that *basic* propositions are knowable if true, which also prevents acceptance of line (5). Both of these are what I shall call 'change--the--class' strategies: they work by changing the class of propositions p for which the anti--realist holds $p \supset \Diamond Kp$. Another way of thinking about them is as changing the antecedent of WVER from ' p ' to ' $p \ \& \ q$ ' for some q ; for instance, Dummett's ' q ' is ' p is basic'.

There has been a good deal of debate concerning the acceptability of these change--the--class strategies, which I won't go into here. I'll just note a (commonly shared) intuitive response, which is that such strategies can seem rather ad hoc. They have a whiff of monster--barring: we want to adhere to the general principle WVER, but we don't like the consequences of certain particular instances of it, so we explicitly rule out those instances. The hard work to be done if this is your preferred tack is to dispel this whiff.

A different sort of response to the Classic Puzzle is to change, not the *class* of propositions p for which the anti--realist holds $p \supset \Diamond Kp$, but rather the *claim* that the anti--realist makes about all propositions. One can think of this type of strategy as changing the consequent of WVER from ' $\Diamond Kp$ ' to something else.

A 'change--the--claim' strategy may or may not amount to something which could sensibly be called a 'restriction' strategy. For the resulting anti--realist claim may be strictly weaker than WVER, in which case the term 'restriction' would seem appropriate. Alternatively, it may be weaker in some ways (enough to avoid the paradox) and stronger in others, in which case the word 'restriction' is potentially misleading. In any case, it is important to note that the species of restriction involved

in change--the--claim strategies is logical weakening rather than (the more specific notion of) delimitation of the class of propositions to which the knowability claim applies. My own preferred strategy with respect to the Classic Puzzle, which I'll describe in a moment, is a change--the--claim strategy.

Another is due to Cozzo (1994), who suggests that an anti--realist understanding of truth need only lead one to accept that if p is true then there is an ideal argument for p . This is intended as a claim that is in some ways weaker than WVER since, on Cozzo's conception, an ideal argument for a true proposition p may exist without p 's being knowable. Hence it is consistent to suppose that all true propositions have ideal arguments although some are unknowable.

But Cozzo's anti--realist position might also be thought to be stronger than WVER in some respects. For all Cozzo says, it may be that some true proposition is knowable although no ideal argument for it exists. If that is so, then it is consistent to suppose that all true propositions are knowable although some lack ideal arguments.³ In which case Cozzo's anti--realist position has strength which WVER lacks.

Edgington (1985) has proposed a change--the--class--and--the--claim strategy. She suggests that the anti--realist should say that for all p , if *actually* p is true then *actually* p is knowable, or in symbols: $Ap \supset \Diamond KAp$. I'll follow Williamson in calling Edgington's proposed anti--realist principle WEVER. Edgington's approach might be described as a 'restriction' strategy in two senses, in that WEVER is strictly weaker than WVER (for it is simply WVER applied to truths of the form Ap) *and* the class of truths mentioned in its antecedent is restricted.

(Notice that WEVER is importantly different, with respect to its modal status, from the pure change--the--claim strategy which adopts as its anti--realist principle $p \supset \Diamond KAp$. The latter is false at some worlds where WEVER, and indeed WVER, are

true.⁴ Thus the pure change--the--claim strategy generates something which is in some ways stronger than WVER, while WEVER is strictly weaker.)

Using WEVER instead of WVER we block the paradox argument by changing the consequent of (5) to $\diamond K(A(p \ \& \ \neg Kp))$, which does not contradict (4). I shall not go into the merits of Edgington's approach, except to mention that two problems with it are that it does not seem quite true to the spirit of anti--realism, because it only claims that certain *necessarily* true propositions are knowable (*actually p* is necessary if p is true), and that it might be difficult for beings in other possible worlds to know propositions of the form *actually p*, since reference from within non--actual worlds back to the actual world is problematic. (See Williamson 2000, chapter 12 for a discussion of these objections. Rückert attempts to respond to them in his 2004, but I query the success of these responses in Jenkins forthcoming.)

My own view concerning the nature of mind--dependence anti--realism suggests two ways in which the global anti--realist might try to avoid a commitment to WVER. Firstly, I argue in Jenkins 2005 that anti--realism should not be characterized in modal terms. I don't think anti--realism is the view that *it's impossible* for there to be a truth which is not appropriately related to our mental lives. Instead, I suggest that anti--realism is (some form of) the view that *what it is* for something to be true (or, more carefully, what is for something to be the case) is for it to be appropriately related to our mental lives.

You might think the latter implies the former, but there are some who would dispute that. Our assessments of other possible worlds take place within this world. So you might think that, although what it is for a sunset to be beautiful is for us to think of it as beautiful, there is a possible world where a sunset is beautiful although we don't exist at that world and hence don't think of it as beautiful at that world. The

reason that sunset is beautiful, even though what it is for it to be beautiful is for us to think it is beautiful, is that we in our *actual* world think of it as it as beautiful when we are assessing this *possible* world. (See my 2005: 202--204 for further discussion of this point.)

However, even if you're not persuaded by this line of thought (and I myself am not sure how persuasive it should be taken to be), there are reasons to doubt whether anti--realists are committed to the *particular* modal claim represented by WVER. As I argue in Jenkins forthcoming, the most the anti--realist is committed to is the view that reality is epistemically accessible. And that, I claim, amounts to the view that:

WVER*: For any true p , the state of affairs S which at the actual world makes p true is recognizable.⁵

This doesn't imply that p is knowable, because it may be that at any world where the state of affairs S is recognized, S does not make p true.⁶ In order to motivate this claim, I require that there be a difference (at the actual world) between knowing p and recognizing the state of affairs which renders p true. For if there is not, then there are no possible worlds where people do the latter without doing the former. States of affairs must be, to some extent, extensionally individuated, so as to allow the requisite distance between recognizing states of affairs and knowing the corresponding propositions. That is, the identity of a state of affairs must be somewhat independent of the proposition by which it is picked out, such that, even if recognizing a state of affairs always amounts to knowing some proposition or other, it need not be that recognizing the state of affairs which actually makes p true necessarily amounts to knowing the proposition p . It may be that, at some non--actual

worlds, knowledge of a different proposition which picks out the same state of affairs suffices for recognition of that state of affairs.

What I recommend in Jenkins forthcoming is that, for these purposes, we think of the states of affairs corresponding to true propositions p as extensional as regards the objects referred to in p and the ranges of quantifier phrases in p , but hyperintensional⁷ as regards the properties ascribed to those objects or collections of objects. (So that, for instance, the state of affairs which renders true the proposition *All cats purr* can be represented as an ordered pair consisting of the class of all cats and the property of purring. The range of the quantifier phrase ‘all cats’ is then treated extensionally, since classes are extensionally individuated, but the state of affairs retains a hyperintensional aspect, since the property of purring is not defined by its extension or intension.)

As with Cozzo's proposal, it is not perspicuous to describe my strategy as a ‘restriction’ strategy. Like Cozzo, I change the claim that the anti--realist makes concerning all true propositions, and there are some respects in which the new proposal is weaker and some respects in which it is stronger. It is weaker because recognition of the state of affairs which actually makes p true can occur (at non--actual worlds) without knowledge of p . Hence it may be that every true proposition is such that the state of affairs which actually makes it true is recognizable, even though some of those propositions are unknowable. Hence WVER* avoids a commitment to WVER and the Church--Fitch argument does not commit WVER*'s defenders to SVER.

But WVER* is also stronger in some respects than WVER (for reasons related to those described in note 4 above). Consider some contingent falsehood f and a world w at which f is true, such that there is an omniscient being at w . Everything which is

true at w is known (and hence knowable) at w . At w , therefore, WVER is true. But WVER* is false. For it is not possible at w (or anywhere else) for someone to recognize the state of affairs which at the actual world makes f true: there is no such state of affairs.⁸

What Exactly Is The New Puzzle?

So much for the Classic Puzzle. The New Puzzle is supposed to make the Church--Fitch argument interesting regardless of our solution to the Classic Puzzle, and regardless of whether we are realists or anti--realists. So let us now turn our attention to it.

Why should realists care about the Church--Fitch argument, given that they can just deny WVER? Well for one thing, realism as I define it in Jenkins 2005 is consistent with WVER. We can accept that all true propositions are knowable (WVER) while denying that *what it is* for a proposition to be true is for it to be knowable (i.e. while remaining realists by my lights). We might simply want to combine realism with optimism about our epistemic capabilities. So some realists may feel tempted to accept WVER. *These* realists are obliged to interest themselves in the paradox of knowability, at least to the extent that anti--realist defenders of WVER are so obliged.

And even realists who are not tempted to accept WVER might find it surprising that a commitment to WVER commits one to SVER, and want to know more about why this is so. Moreover, even if realists try to free themselves of the Church--Fitch problem by denying WVER, realism does not itself supply a good enough *explanation* of why WVER is false, as Douven (2005: 63--64) has pointed out. Certain kinds of realist view might give us reasons to doubt whether it is *feasible*,

or *physically* possible, to know certain truths. But taking the diamond in WVER to indicate only *metaphysical* possibility, realist thinking typically gives us no good reason to reject WVER.

In fact, however, the primary way in which I think the Church--Fitch argument is equally important to realists and anti--realists alike is it that the argument is simply *interesting* in its own right and regardless of whether we accept WVER. WVER is a thought--provoking thesis and it is interesting to think about what sorts of consequences it has. Moreover, the appearance of modal collapse between WVER and SVER is somewhat surprising. To quell this surprise we need either an explanation of what's wrong with the reasoning from WVER to SVER, or else some satisfying explanation of the collapse.

It might sound even more impressive to put the explanans this way (as Kvanvig does in his 2006: 55 and elsewhere): WVER and SVER are shown by the Church--Fitch proof to be *logically* equivalent, so we seem to have lost a 'logical distinction' between the two. SVER obviously commits us to WVER, and now Church--Fitch shows us that WVER commits us to SVER too.

Given that FACT and DIST are both true, WVER is true iff SVER is. And given that FACT and DIST are both necessary, WVER is true in exactly the same worlds as SVER. However, the claim of *logical* equivalence is potentially misleading. It is far from obvious that FACT and DIST are both logical truths, but the proof of SVER from WVER uses them⁹ (see Jenkins 2006). Kvanvig acknowledges the non--logical nature of FACT and DIST upfront in his paper for this volume (p. **). However, many remnants of his 2006 formulation remain (sometimes, but not always, qualified as 'loose' or 'careless' statements of the problem). And, as we shall see in section 5 below, the question of whether or not the equivalence is logical is

potentially important when considering what is the correct approach to the New Puzzle. So it is worth stressing again, to avert any potential confusion, that logical equivalence is not on the cards.

Even Kvanvig's most 'careful' statement of the supposed problem says that there is a 'lost logical distinction between actuality and possibility with respect to what is known' (p. **). This is very misleading. Setting aside the point about non-logicality, there is clearly a distinction 'between actuality and possibility with respect to what is known' as that phrase is most naturally understood. For the known truths are a proper subset of the knowable truths. Formulations like this risk conflating something genuinely alarming but not established by Church--Fitch with something established by Church--Fitch but not genuinely alarming.

Another alarming--sounding but, on a little reflection, misleading formulation of the supposed problem is also offered: that there is 'no logical distinction between universally knowable truth and universally known truth'. This sounds impressive enough. Except that the only explication offered of this claim is that it means that there is an equivalence (given FACT and DIST) between WVER and SVER. But *that* is the familiar equivalence which Church--Fitch obviously brings to light. Kvanvig is supposed to be telling us what is so alarming about this equivalence, not just attaching a new label to it. He is claiming to have noticed a 'lost logical distinction [which] is part of a firmly entrenched understanding of the nature of the modalities of necessity, possibility and actuality' (p. *). But it is far from 'firmly entrenched' that WVER is not equivalent to SVER in the presence of FACT and DIST. Many people think it is.

This is a mere quibble, however. One thing it is much more important to note is that what we do *not* have on our hands here is a case of *complete* collapse of '◇Kp' into 'Kp', where complete collapse would mean that we could replace '◇Kp' with

'Kp' wherever we liked. It's just that (in the presence of FACT and DIST), we can make such a substitution within the consequent of this one conditional: ' $p \supset \Diamond Kp$ '. It's thus misleading to say that the Church--Fitch proof threatens us with the conclusion that there is 'no ... distinction between actuality and possibility in this way' (this volume, p. **), or to say, however 'carelessly', that it suggests that 'possible knowledge implies actual knowledge' (p. **). The difference in strength between $\Diamond Kp$ and Kp is not undermined by the Church--Fitch proof, since there are still plenty of contexts where the latter cannot be substituted for the former, even given FACT and DIST.

This fact should already go *some* way towards lessening any surprise we may feel at learning that WVER commits one to SVER. For this sort of thing, i.e. modal 'collapse', or other similar strengthening, *within the consequent of one particular conditional*, happens in many other cases too--cases where it is clearly nothing to be concerned about. For instance, it's not surprising that we can replace $\Diamond p$ with p in the consequent of a material conditional that has a necessarily false antecedent and end up with something that is equivalent to what we started with. Similarly, $p \supset \Diamond p$ is equivalent to $p \supset p$, but I take it this is not surprising either. Neither of these equivalences does anything to "threaten the logical distinction between possibility and actuality" in this area, i.e. the distinction between $\Diamond p$ and p .

One might think that the reason these cases aren't surprising is that we're dealing in logical truths, and it's never surprising that two logical truths are equivalent. I'm not sure how good this response is. Insofar as it is 'surprising' that you can replace ' $\Diamond Kp$ ' with ' Kp ' in WVER without changing the circumstances under which it is true, you might think that it should be equally 'surprising' that when you can replace an occurrence of ' $\Diamond p$ ' with ' p ' in one of the above contexts without

changing the circumstances under which it is true--i.e. without transforming the initial logical truth into something which is not a logical truth.

But in any case, there are other parallel cases that do *not* deal in logical truths. For instance, $\neg p \supset (p \vee q)$ is logically equivalent to $\neg p \supset q$. I'll call this the case of the disappearing disjunct. I take it that the fact that the consequent here can be strengthened from $(p \vee q)$ to q without changing the circumstances under which the proposition is true isn't especially alarming or paradoxical, provided we have a good grip on how the material conditional works. Certainly it does not do anything to threaten the logical distinction between $(p \vee q)$ and q .

Moreover, further examples are available where the equivalence is not even logical (for an even closer analogy with the Church--Fitch case). For instance, given that it is a necessary, but non--logical, truth that all jade is either nephrite or jadeite, ' $\neg X$ is jade) \supset (X is nephrite or X is jadeite)' is equivalent to, i.e. true at all the same worlds as, ' $\neg X$ is jade) \supset (X is nephrite)'. Again, nothing paradoxical is going on here; the distinction between 'X is nephrite or jadeite' and the stronger 'X is nephrite' is not under threat just because the latter can be substituted for the former in the consequent of this one conditional without changing the circumstances under which the conditional is true. This is another disappearing disjunct case from which nothing alarming follows.

So I think the New Puzzle is best understood slightly differently from the way Kvanvig suggests. He encourages us to be surprised that the strengthening from $\Box Kp$ to Kp in the consequent of WVER makes no difference to the circumstances in which the conditional is true. But it can't be the mere strengthening that's surprising, because that sort of thing (strengthening within the consequent of one particular conditional) happens all the time.¹⁰ It must be something else. What is it?

I think answering that question will be half the battle of solving the New Puzzle. In fact, I think it will probably be almost all the battle. I think one important question which properly belongs to the New Puzzle is:

- *Why are we surprised by the Church--Fitch proof?*

Once we know the answer to this question, we will be able to see how to give an explanation of why the proof works which satisfactorily removes this surprise.

Solving the New Puzzle

Consider a simple explanation of why the Church--Fitch argument works, and hence of why WVER commits one to SVER:

E: Nothing of the form $(p \ \& \ \neg Kp)$ is knowable. That's obvious. But given WVER,

if something of that form is true, then it is knowable. That's why, if WVER is

true, nothing of the form $(p \ \& \ \neg Kp)$ is true. And that's why if WVER is true then it follows that SVER is true too.

Kvanvig thinks there is something *deeply* surprising about the Church--Fitch proof; he must, therefore, think there is more to the surprise the proof engenders than the kind of surprise we can get over just by thinking carefully about how the proof works. The proof is paradoxical, on his view, because we somehow cannot bring ourselves to accept that it works, even after we have seen it and fully understood it. It would be inappropriate to acknowledge the truth of E and just get over it. If that's right, there must be something inadequate about the simple explanation E. But what?

One thing Kvanvig feels is in need of explanation is that the Church--Fitch proof shows WVER and SVER to have the same modal status (this volume, p. *). We are supposed to be surprised when the proof forces us to accept this, because

according to Kvanvig we would previously have thought that WVER 'if true, is ... necessarily true [since] it is a purported implication of a proper understanding of the nature of truth', whereas SVER is supposed to be contingent.

However, on the assumption that WVER is *false*, there is no reason to suppose it is non--contingent. So realists, at least, might well believe, before thinking about Church--Fitch, that both WVER and SVER are contingently false (contingently because presumably they will think there is a possible world where everything is known, at which both WVER and SVER are true). And they can, of course, continue to hold this after thinking about Church--Fitch. So the proof tells them nothing new about the respective modal status of the two claims. Since Kvanvig wants us to focus on an explanatory challenge which faces everyone alike, realist or anti--realist, this can't be part of it.¹¹

So what *can* it be that is wrong with E? Do we need further explanation of one or more of the claims it draws upon? I don't think so, but even if we do it could surely be given (see for example my comments in footnote 12 below).

If my characterization of the New Puzzle is accurate, one thing that the simple explanation E leaves out is an explanation of why, before encountering the Church--Fitch proof, we feel that WVER shouldn't commit us to SVER. But again, however, there is a simple explanation available. What's behind this fact is that when someone innocent of Church--Fitch hears the claim *All true propositions are knowable*, she *just doesn't think about* true propositions of the form $(p \ \& \ \neg \ Kp)$. These aren't exactly the kinds of things that spring to mind when this kind of general claim about true propositions is made, if one hasn't been exposed to the Church--Fitch proof. According to the simple explanation E, it is attention to these cases that reveals why 1 and 2 are equivalent (or rather, why the surprising direction of the equivalence holds).

The explanation of why we feel strongly beforehand that WVER shouldn't commit us to SVER is simply that we haven't thought hard enough about the full implications of WVER--we haven't thought about what it will mean for propositions of the form $(p \ \& \ \neg Kp)$.

Even if that's right, though, it may be thought that there is still something lacking in these simple explanations which prevents our just getting over it. It might be said that they don't really explain *the disappearance of the possibility operator*; they just explain *why SVER follows from WVER*. This is an interesting kind of worry. What counts as a good explanation of a fact does plausibly depend on (among other things) the way the fact is presented. The thought here would be that presenting the implication of SVER by WVER *as* a case of apparent modal collapse makes the simple explanation offered above inadequate (even if it is a good--enough explanation of the same fact under a different description--e.g. when it is described as the fact that WVER commits us to SVER).

I am not unsympathetic to those who think the simple explanation E is explanation enough of the fact in question under either guise, and who think a sufficient explanation of why we are surprised when we first encounter the Church--Fitch proof is that we just hadn't thought hard enough about all the instances of WVER. I am sympathetic, that is to say, to those who think the best response to the New Puzzle is basically an injunction to get over it. At any rate, I don't think someone who has this view can fairly be dismissed as 'living in logical denial' (Kvanvig, this volume, p. *12).

Be that as it may, what's required of a satisfactory explanation of a fact can depend, not just on how the fact is presented, but also on who the explanation is for. So while some may reasonably find the simple explanations adequate, others may

reasonably demand to hear more before their puzzlement is resolved. For such people, I think more can be said, and that is what I shall try to offer in the rest of this section.

First, let me make a quick remark concerning Kvanvig's suggestion as to what kind of explanation we should be looking for. Kvanvig's paradigm of a satisfying explanation of modal collapse is the Kripke--style semantic explanation of why what is possibly necessary is not logically distinct from what is necessary (the characteristic commitment of modal logic S5). If we accept a possible worlds semantics for the modal operators (and if we make the required assumptions about accessibility) it becomes obvious why 'possibly necessarily p' is equivalent to 'necessarily p'. By thinking about the semantics for the operators involved in these two propositions we can see why the two are equivalent in strength.

Two things are noteworthy about this. One is that it is not clear that an explanation that appeals only (or primarily) to semantics is to be expected or desired in the Church--Fitch case, where the equivalence is, as I stressed above, not establishable through logic alone but only with the aid of substantive non--logical principles about knowledge, namely FACT and DIST. Compare the jade example on p. * above. A big part of the explanation of this equivalence is presumably the empirical fact that there are exactly two kinds of jade: nephrite and jadeite.¹³

The second point to note is that there is another respect in which the modal collapse that characterizes S5 is very different from the modal 'collapse' revealed by the Church--Fitch proof. The former, but not the latter, is a *complete* collapse. That is to say, with S5 we get intersubstitutability in all contexts between $\diamond\Box p$ and $\Box p$, whereas with Church--Fitch we get intersubstitutability between $\diamond Kp$ and p only within the consequent of a certain conditional.

For these two reasons I think that anyone who thinks it appropriate to seek a semantic explanation of the disappearance of the diamond in WVER, along the lines of the possible--worlds explanation of why $\diamond \Box p$ implies $\Box p$, probably has the wrong sort of target in his sights. But what sort of thing *should* we be looking for?

I am tempted to think that some light might be shed on this matter through comparison (not formal, but psychological) between what happens when we think about the Church--Fitch argument and what happens when we think about Russell's set--theoretic paradox. Russell's paradox proves that a seemingly innocent universal claim (*Every property determines a set of objects with that property*) leads to contradiction. The Church--Fitch argument proves that a seemingly innocent universal claim (*Every true proposition can be known*) leads to contradiction of a patent truth (that some true propositions are unknown).

Understood correctly, Russell's 'paradox' is not really paradoxical. It's just a proof that the seemingly innocent claim that every property determines a set is in fact false, and less innocent than it seemed. To see why, we are invited to consider a specific (and initially unobvious) case. The paradox argument shows that, although being non--self--membered is a perfectly good property for sets to have, there is no corresponding set of non--self--membered sets. It can be correctly called a paradox only insofar as one is tempted by the thought that there *really should* be such a set, or that the general claim should be true, or perhaps simply that it should not be possible to disprove the general claim by this sort of method.

Similarly, the Church--Fitch proof is not really paradoxical. It's just a proof that the seemingly innocent claim that every true proposition is knowable is in fact false (assuming, that is, that not all true propositions are known), and less innocent than it seemed. To see why, we are invited to consider its implications in a specific

(and initially unobvious) case. The Church--Fitch proof shows that, although there are perfectly good true propositions of the form $(p \ \& \ \neg Kp)$, there is no possibility of knowing a proposition of this form. It can be called a paradox only insofar as one is tempted by the thought that it *really should* be possible to know things like this, or that the general claim should be true, or that it should not be possible to disprove the general claim by this sort of method.

I think that, in both cases, what happens is that an innocent--sounding (but in fact far from innocent) universal claim gets put forward in a confused attempt to express a similar, *genuinely* innocent, claim. In the case of Russell's paradox, what was intended is better captured by the axioms of standard iterative set theory.¹⁴ And, I believe, in the Church--Fitch case, what was intended is better captured by the claim that if p is true then the state of affairs which at the actual world makes p true is recognizable.

In both cases, the paradox arguments seem baffling, and cry out for substantive explanation, if we mistake the apparently innocent claim for the genuinely innocent one. For we can't understand how the innocent claim we *meant* to express could have such objectionable consequences as are being attributed to the claim we have *actually* expressed. However, once we realize that the claim we intended to make is not the same as the one we actually made, it is no longer so baffling that the claim we actually made has these undesirable consequences.

In short, then, there is no mystery about the disappearance of the diamond in the Church--Fitch proof. The diamond disappears because WVER has (admittedly unobvious) strength, which it should not have if it is to serve as an expression of one's commitment to the epistemic accessibility of reality. Note that nothing comparable is going on in the case of the disappearing disjunct (see p. * above), which is why we

don't find ourselves experiencing any comparable bafflement about that case.

Concluding Remarks

A couple of further points are worth mentioning. One is that, as is well-rehearsed in the literature, Church--Fitch--style arguments can be constructed using other factive operators on propositions,¹⁵ not just for 'K'. (Kvanvig, this volume, pp. *, offers a discussion of this point.) For instance, if we assume that every true proposition can be truly believed, we will be able to derive that every true proposition *is* truly believed.

Insofar as these proofs are surprising in the same way that the Church--Fitch proof is surprising, it would be nice to be able to offer the same diagnosis of that surprise. And in some cases this is no problem. For instance, we might propose that when we say that any true proposition can be truly believed, we don't really intend to express $p \supset \Diamond TBp$, but rather something like: *Every true proposition is such that the state of affairs which makes it true can be correctly taken to obtain.*

However, it is important (and interesting) to note that some comparable claims involving other operators will not be amenable to treatment along quite these lines.¹⁶ Consider, for instance, the claim that any true proposition p is such that the state of affairs S which makes p true can be recognized *by me now*. For any true proposition q of the form (the state of affairs S which makes p true obtains now and is not now recognized by me), it is not possible that I recognize now the state of affairs T which makes q true. (Because plausibly, recognizing T now will involve recognizing S now, but q must be false if I recognize S now.) Yet some proposition of the form of q is surely true. Therefore it is not the case that any true proposition p is such that the state of affairs S which makes p true can be recognized by me now.

Moreover, the way we show that this is not so is Church--Fitch--like, and might therefore be expected to engender exactly the same kind of puzzlement as other Church--Fitch--style arguments. Yet we won't be able to explain that puzzlement by saying that what we really meant to express was something else--something involving recognition of states of affairs rather than knowledge of propositions.¹⁷

One thing to note about this kind of case is that any surprise engendered by the new Church--Fitch--style argument can't have much to do with the prior plausibility of the claim that any true proposition p is such that a proposition expressing the state of affairs S which makes p true can be recognized by me now. For that claim has very little prior plausibility. However, it might seem that there is still a salient similarity with the original Church--Fitch argument concerning the claim that all true propositions are knowable. Admittedly, in this case we are not at all surprised that the claim is false, but we are nonetheless surprised that it should be disprovable *in this way*.

If it is true that this aspect of the new argument is surprising in the same way as the corresponding aspect of the original argument was surprising, then it is not clear how my explanation of the latter surprise could be correct. For in the new case we have exactly the same kind of surprise, but cannot give the same explanation of it.

However, I am inclined to think that the surprise engendered in the new case is not entirely comparable to that engendered in the original case. In the new case, I would suggest, *all* the surprise is engendered by the fact that we *just haven't thought about* the problem cases. When we do think about them, and when we understand how the Church--Fitch--like proof works, we understand why the apparently weaker claim actually commits one to the apparently stronger one. And our feelings of surprise should be thereby resolved. We should get over it.

I am prepared to grant that, in the *original* case, some people do encounter a deeper and more robust surprise than this--a kind of surprise that is not fully resolved merely by thinking carefully about the problem cases and understanding the workings of the Church--Fitch proof. That deeper surprise, I think, is to be explained by showing that there is potential for confusion between the claim that all true propositions are knowable and the claim that reality is epistemically accessible (the latter of which, we are right to think, does not commit us to thinking that all true propositions are knowable).

Some closing comments are perhaps in order, to make explicit the relationship between my favoured approaches to the Classic Puzzle and the New Puzzle. In addressing the Classic Puzzle, I offer mind--dependence anti--realists a defence against the charge that the Church--Fitch proof shows their view to be untenable. My response to the Classic Puzzle is to argue that anti--realism is best understood as commitment to a claim that *is not prone* to the Church--Fitch argument. Whereas my discussion (indeed, any discussion) of the New Puzzle is an exploration of the way we respond when thinking about propositions which *are* prone to the Church--Fitch argument. The latter, while interesting in its own right, is strictly speaking tangential to a discussion of whether anti--realism is true, if I am right about what that doctrine amounts to. Nevertheless, my discussion the Classic Puzzle offer us resources with which to address the New Puzzle. For it enables us to argue that, insofar as any *deep* surprise is engendered by the Church--Fitch proof, that surprise is due to the confusion of WVER with a claim to the effect that reality is epistemically accessible to us.

It seems likely that other approaches to the Classic Puzzle will also generate resources for addressing the New Puzzle. For instance, if Edgington is right that the

anti--realist epistemic accessibility claim should really be WVER, it could be argued that the reason we are especially surprised by Church--Fitch is that we mistook WVER for WVER and hence were surprised when WVER turned out to have consequences which the anti--realist epistemic accessibility claim should not have. Other change--the--class or change--the--claim strategies could be put to similar use.

Kvanvig (this volume, pp. *) considers the application to the New Puzzle of Hand's (2003) response to the Classic Puzzle. This involves pointing out a 'structural interference' between the operators and connectives in $K(p \ \& \ \neg Kp)$: knowing the first conjunct entails that the second conjunct is false. *Pace* Kvanvig, I think something like this may well be (at least part of) a good explanation of the Church--Fitch result for some audiences. (For instance, it could be used to provide explanatory background for the first two sentences of my simple explanation E above.)

Kvanvig's rejection of this manoeuvre seems to rest on his not finding it sufficiently analogous to one that can be made in defence of the ontological argument for the existence of God (pp. *). This is very puzzling. It might be that the 'structural interference' manoeuvre works quite differently, in a way that is not analogous to this--or any--defence of the ontological argument. (For instance, it may function simply as a source of explanatory background for part of E). Note also that Kvanvig thinks that in order for the manoeuvre to work in the same way as the relevant defence of the ontological argument (and hence, apparently, to work at all) it must establish that SVER is *necessarily* false (p. *). But no defence of the Church--Fitch equivalence should have to establish that SVER is necessarily false. Even once the Church--Fitch reasoning is understood and accepted in its entirety, SVER seems to be *contingently* false, as I pointed out on p. * above. For there are worlds where both WVER and

SVER are true. Thus Kvanvig's understanding of the way the manoeuvre is supposed to work if it works at all seems questionable.

Some responses to the Classic Puzzle involve no change--the--class or change--the--claim strategy. Some, for instance, believe that WVER is a fair interpretation of the anti--realist's epistemic accessibility claim, but deny that the derivation of SVER from WVER goes through in their preferred logic (see e.g. Beall, this volume, for a discussion of logics which block the inference). This view can also provide resources for addressing the New Puzzle: it offers us grounds for denying that the puzzling equivalence is genuine.

Others respond to the Classic Puzzle by holding that WVER is a commitment of anti--realism and the equivalence is genuine enough, and that anti--realism is thus undermined. Such a person might choose to respond to the New Puzzle by saying that all we need do is think hard enough about how the Church--Fitch proof works to enable ourselves to get over any initial surprise it generates. We should not be dismissive of this view, even if we think there is in fact more to say in response to the New Puzzle. It is often important to take seriously the possibility that a purported puzzle is no puzzle at all.

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¹ Thanks to JC Beall for pressing me to clarify this point here.

² An alternative way of categorizing the various strategies described in this section can be found in Brogaard and Salerno 2004. They describe Edgington's manoeuvre as a 'semantic' restriction strategy, and Tennant's and Dummett's as 'syntactic' restriction strategies. A semantic/syntactic distinction need not match up extensionally with the distinction I draw between change--the--claim and change--the--class manoeuvres. For instance, it could be proposed that we limit the *class* of relevant propositions to those which meet some *semantic* criterion.

³ This supposition is not consistent with the *further* assumption that some truths are unknown, of course. But that is irrelevant to the question of relative strength which is at issue here.

⁴ Consider some contingent falsehood f and a world w at which f is true, such that there is an omniscient being at w . Everything which is true at w is known (and hence knowable) at w . At w , therefore, WVER is true (and hence so is WAVER). But $f \supset \Diamond KAf$ is false at w . For f is true at w , but it is not possible at w (or anywhere else) for

someone to know Af . Af is false--hence unknown--at every world because f is false at our actual world.

⁵ I assume a one-one correlation between true propositions and states of affairs which make them true.

⁶ Some claim that the existence of a truthmaker necessitates any proposition it makes true; see e.g. Armstrong (1997). I am not tempted by truthmaker necessitarianism myself. For current purposes, however, I am equally happy to deny that the states of affairs I'm interested in are 'truthmakers' in the sense Armstrong has in mind. The idea behind the envisaged notion of truthmaking is that for every true proposition p , there is a state of affairs the existence of which supplies a certain kind of *explanation* of p 's truth. Explanation does not require necessitation.

⁷ Jenkins forthcoming says 'intensional', intending the (somewhat old--fashioned) usage on which this simply means non--extensional. Current usage prefers to reserve 'intensional' for that which is non--extensional *and* non--hyperintensional. In any case, hyperintensionality is more specifically what is intended.

⁸ It is for this kind of reason that anti--realists should not regard WVER* as necessary; see Jenkins forthcoming, note 2. (A related principle involving the appropriate relativization to worlds will, however, presumably be regarded as necessary.)

⁹ Williamson 1993 points out that *some* arguments against WVER and related principles might be constructed without relying on DIST (section IV). But, as he points out, DIST is still required for the formal proof of the equivalence.

¹⁰ Kvanvig's comments about 'multiple contexts' at pp. ** (targeted on Mackie's 'syntactic' approach to lessening the surprise of the Church--Fitch result) might be thought to address this kind of point. But to take them that way would be to say that

what the analogies I am drawing here actually do is flag up 'a more general paradoxicality'. That is to say, it would suggest that one really does find the case of the disappearing disjunct, and like cases, paradoxical. Of course, if it's *that* easy to come up with paradoxes, paradoxicality is not very worrying. Certainly no--one should be looking to revise any of their beliefs just because they throw up the case of the disappearing disjunct.

¹¹ He seems to intend to make a similar point later when he says (p. *) that the challenge of Church--Fitch is that 'we are told that what looks like a necessary truth is logically equivalent to a contingent truth'. This does make it sound like the thing that needs explaining is a new--found equivalence in modal status between to claims. But it is confused. WVER does not look like a truth at all (let alone a necessary one) to many realists, and SVER does not look like a contingent truth to *anybody*--it is clearly a falsehood.

¹² As an aside, I note that on p. * Kvanvig shifts between two very different responses to Church--Fitch: on the one hand, denying that it is a paradox, and on the other, accepting that SVER is a necessary truth. The latter response is a proper subspecies of the former. Since Kvanvig mentions myself and Williamson in a footnote during this passage as advocates of the view he is discussing, it is worth pointing out that neither Williamson nor I accepts SVER, let alone accepts that it is necessary. We both think the proof is non--paradoxical for other reasons, which Kvanvig does not describe.

¹³ Of course, semantics may also be *part* of, or may help underwrite, the explanation; for instance, the rigidity of 'jade' is presumably part of the explanation of why it is *necessary* that all jade is nephrite or jadeite. But for that matter, semantics may be made *part* of, or may help underwrite, explanation E--some appeal to the meaning of

'knows'--in particular, the fact that 'knows' is factive--might be included in explanation of E's initial claim that nothing of the form $(p \& \neg Kp)$ is knowable.

¹⁴ It has been suggested to me that, in fact, the notion of set characterized in the axioms of iterative set theory is very different from that which was supposed to be characterized by naïve comprehension. While there are of course some differences, I think there are also enough similarities to allow us to describe the axioms of (say) ZFC as an attempt to capture what was previously supposed to be characterized by naïve set theory, the most important of these being that both are theories of how a number of things can be collected together to form a new entity which is something over and above its members. (Thanks to Aidan McGlynn for raising this interesting issue in online discussion at

<http://longwordsbotherme.blogspot.com/2006/01/knowability.html>. McGlynn here also raises the interesting possibility that something akin to what I think is happening in the case of the Church--Fitch paradox may also be happening when we feel tempted to accept the major premise of the Sorites paradox.)

¹⁵ And, indeed, some non--factive operators, such as 'It is rationally believed that' (see Mackie 1980).

¹⁶ I am indebted to Kim Stebel for online discussion of this point at

<http://longwordsbotherme.blogspot.com/2005/07/mystery--of--disappearing--diamond.html>.

¹⁷ Note that this is not just because what we *actually* expressed was something involving recognition of states of affairs rather than knowledge of propositions, but because the way I appeal to states of affairs to block the original Church--Fitch argument is by appealing to the ranges of the quantifiers appearing in 'Kp' (see

Jenkins forthcoming, section IV). There are no quantifiers in the new operator, however, so this manoeuvre cannot be used here.