

THE RESURRECTION SHUFFLE: TRACKING THEORIES AND BACKWARD CLOCKS

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ABSTRACT: Several years ago, John Williams posted his final response to Clarke, Adams and Barker in an ongoing debate about the status of Robert Nozick's truth-tracking account of propositional knowledge and Fred Dretske's early "Conclusive Reasons" account of knowledge. In this paper, we respond directly to his "Still Stuck on the Backward Clock" paper. We think that Williams' Backward Clock Example fails against both Nozick and Dretske. Moreover, other objections by Williams against our views are shown to be either false or misrepresentations of our position.¹

KEYWORDS: sensitive belief, extra-sensitive belief, reliable methods, backward clock, truth-tracking, conclusive reasons

1. Introduction

In "Resurrecting the Tracking Theories", Fred Adams and I argued that a series of well-known apparent counterexamples to Robert Nozick and Fred Dretske's truth-tracking theories of knowledge fail (Adams and Clarke 2005). These included Ray Martin's *Racetrack*, Pappas and Swain's *Generator*, Bonjour's *Clairvoyant*,² and Kripke's *Red Barn*, *Deceased Dictator*, and his *Sloppy Scientist*.³ In 2015, John Williams and Neil Sinhababu responded to our paper with "The Backward Clock, Truth-Tracking, and Safety." (Williams and Sinhababu 2015) Among other things, they argued that their Backward Clock Example was a counterexample to Nozick's truth-tracking analysis of propositional knowledge.⁴ In "Beat the (Backward) Clock,"

¹ In order to promote clarity, note that we have introduced sub-section titles that are similar to, or identical with, Williams' sub-section titles in order for the reader to compare the original text of Williams' final 2017 paper with our response to it.

² See Martin 1975, Martin 1983; Pappas and Swain, 1973; and Bonjour 1980.

³ Kripke offered these well-known examples at a session of American Philosophical Association in the 1980's.

⁴ Williams and Sinhababu also object to Duncan Pritchard's safety account of knowledge in this paper. However, we did not address this aspect of their paper since our concern was only with sensitivity accounts of knowledge.

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Adams, Barker and I argued that Backward Clock is not a counterexample to Nozick's account of knowledge (Adams, Barker and Clarke 2016).

In his rejoinder, "There's Nothing to Beat a Backward Clock: A Rejoinder to Adams, Barker, and Clarke," Williams argued that our response fails and he argued that Dretske's early analysis of knowledge is also too weak (Williams 2017a). We responded with "Methods Matter: Beating the Backward Clock." (Clarke, Adams and Barker 2017) But Williams replied to that paper with "Still Stuck on the Backward Clock: A Rejoinder to Adams, Barker and Clarke." (Williams 2017b) The time has come to address this final, clever and powerful paper by John Williams.

2. Nozick's Analysis of Knowledge and the Backward Clock

We will follow Williams' formulation of Nozick's account from Williams' final paper in order to remain faithful to Williams' argument. According to Williams, Nozick's analysis of propositional knowledge is as follows:

- S knows that p, using method M of arriving at a belief whether p, just in case
- (1) P.
 - (2) S believes, using M, that p.
 - (3) In the closest (that is, most similar) worlds to the actual world in which not p (and in which S uses M), S does not believe that p.
 - (4) In the closest (that is, most similar) worlds to the actual world in which p (and in which S uses M), S believes that p (Williams 2017b, 244).⁵

As Williams notes:

- (3) is commonly known as the 'sensitivity condition,' meaning that S's belief that p is sensitive to falsehood; roughly, she would not have that belief if it were false. (4) is commonly known as the 'adherence condition,' meaning that S's belief that p adheres to the truth; roughly, were she to have that belief in slightly changed circumstances, then it would still be true. A belief that is both sensitive to falsehood and adherent to truth is said to be 'truth-tracking.' (Williams 2017b, 245)

In his "There's Nothing to Beat a Backward Clock," Williams tried to show that S does not know that p in Backward Clock despite the apparent fact that Nozick's conditions on knowledge are satisfied. Williams infers that Nozick's account of knowledge is too weak, predicting knowledge where there is ignorance. We characterized the method as involving a **digital clock** such that one is "looking at the clock and determining what it says." (Clarke, Adams and Barker 2017, 360) But

⁵ Note that this is not Nozick's formulation of his account of propositional knowledge, but Williams thinks (and we agree) that it is equivalent to it.

Williams denies this saying that: “As I said in my rejoinder, this is not what I stipulated. Your method of ascertaining the time you wake is to observe, during the period from 4:00 pm and 5:00 pm. (since that is the period during which you nap, not knowing when you will awake) the **position of its hands** (my emphasis).” (Williams 2017b, 246)⁶ In other words, Williams is here arguing that we misconstrued his example simply as involving a **digital clock** and so he formulates his final Backward Clock Example as follows:

You habitually nap between 4:00 pm and 5:00 pm. Your method of ascertaining the time you wake is to observe, between 4:00 pm and 5:00 pm, the position of the hands of your clock, one you know has always worked perfectly reliably. This clock is analogue, so its hands sweep its face continuously. However, it has no second-hand. Awaking at 4:30 pm, you see that its hands point to 4:30 pm. And indeed it is 4:30 pm because unbeknownst to you, the clock has continued to work perfectly reliably until 4:00 pm, when a bug in the programming of its microchip circuit caused its hands to jump to 5:00 pm and then run perfectly reliably backwards from 5:00 until 4:00 pm (Williams 2017b, 248).

Note that Williams removes the idea of a designer of the clock for this formulation and substitutes a ‘bug’ in order to eliminate any unnecessary complications that might arise in the analysis of the example. The result, according to Williams, is that you believe correctly that p and that you would not believe that $\text{not-}p$ because at any other time between 4 pm and 5 pm you would not believe it was 4:30 (even though you would get those times wrong given the mechanism at play). Hence, your belief is sensitive. And, in other circumstances, when you looked at the clock at 4:30 it would have read 4:30, so your belief is adherent. Yet clearly, you do not know that p . Hence, Nozick’s conditions are too weak for propositional knowledge. We argued that the example does not satisfy Nozick’s adherence condition because, under changed circumstances, the cognizer might not believe that p . For instance, the digital clock might shut down at 4:30 pm and the cognizer would not believe that it is 4:30 when she awakes. Hence, S would not believe anything, while p would true. But Williams rules this example out of court because he says that we have changed the example by referring to a digital clock instead of an analogue clock. One must hold the circumstances fixed to consider counterfactuals in such cases. But here he errs.

⁶ Note that even if the method is construed more broadly here as “observing the hands of the clock between 4 pm and 5 pm”, this method fails the tracking conditions. For had you awoke at any other time during that hour (but 4:30 pm) you would fail to know since p would be false for all other times, but you would believe that p . Hence, you would fail to track the truth.

The method must be held fixed, i.e., visual perception, but not the mechanism, a digital clock versus an analogue clock. Hence, we are allowed to change the idea from the hands of an analogue clock to a digital clock. And methods, for Nozick, are determined from the standpoint of the cognizer's perspective (not from some objective external perspective). In fact, we went into a great deal of detail on this matter in "Methods Matter: Beating the Backward Clock" (Clarke, Adams and Barker 2017, 102-104). As we noted: "Consider Nozick's Grandmother Case: she believes that her Grandson is well by appeal to visual perception, but if he were sick then her daughter would tell her that he is well anyway. But Nozick tells us that that alternate method, i.e., testimony, should not be allowed to undermine the knowledge caused by the method of visual perception that the Grandmother has." (Clarke, Adams and Barker 2017, 102-103) The broader point is that because the signal from the clock is equivocal, the cognizer fails to know. The sensitivity achieved is at the cost of false beliefs other than p in every case and adherence is not achieved at all in the near possible world where the mechanism changes from an analogue clock to a digital clock. S 's belief that p does not track the truth reliably in near possible worlds as it must to secure knowledge.

Our problem with Williams' example has always been that if we suppose the tracking conditions are met, then one can know only one thing. What source of knowledge is so limited? Let's consider Armstrong's *Belief, Truth, & Knowledge* where he talks about some useful examples. He gives one of a person who experiences auditory hallucinations. As he says:

A is suffering from auditory hallucinations, which he takes to be genuine. Like an object which is liable to explode under the impact of almost any slight shock, he is in such a state that almost any sensory stimulus will make him believe (normally falsely) that there is a sound in his environment. From time to time, however, the stimulus that makes him believe that there is a sound in his environment *is in fact a sound*. He has a 'veridical hallucination'! ... but we should want to deny that the belief was a case of knowledge. (Armstrong 2000, 79)

Look at his way of dealing with the example: he says basically, it is too narrow—a one time only reliability. And such is no reliability at all. Just a happy accident. So the reason we don't think the conditions are met is that if you look at other times on the clock and if you woke up at a different time, you would fail both conditions 3 and 4. Surely, the method is **NOT** "looking at the clock at 4:30." That is slicing things too thinly. The method is **looking at the clock and believing the time it displays**. And **THAT** (broader) method does not satisfy conditions 3 and 4. We are not altering Nozick's theory in saying this but simply pointing out that Nozick intended to slice methods wider than Williams allows. Only by altering Nozick's own understanding of his own theory can Williams make his case. But as one can see with

Armstrong's reply to the Auditory Hallucination Example, he agrees with what we are saying. Nozick and Dretske agree with us too. Armstrong continues by discussing how a thermometer that only registered the correct temperature of a child correctly once would not be considered reliable for the practical purposes of knowledge. As he says:

Now have we got a thermometer which is reliable ...in these highly specific conditions? We would resist this conclusion. Why? The answer, I think, is that thermometers are built to use, and a thermometer of that sort would be of no use, even if we knew and could identify the conditions in which its readings of "T" had to be correct. For the conditions would be so highly idiosyncratic that in all probability they would never occur more than once. Rather, what is wanted is a thermometer which will register correctly in a variety of conditions. But in order to ensure this, the conditions in which it gives a correct reading must not be specified too closely. Indeed, the more unspecified these are, then, all other things being equal, the more useful the thermometer will be. (Armstrong 2000, 80)

Armstrong goes on to apply these considerations to non-inferential knowledge. As he says:

The same sort of considerations apply in the case of non-inferential knowledge. There is a sense in which knowledge is a pragmatic concept. Why are we interested in the distinction between knowledge and mere true belief? Because the man who has mere true belief is unreliable. He was right this time, but if the same sort of situation crops up again he is likely to get it wrong. (The point made by the luckless Meno, but brushed aside by Socrates.) But if it is empirically impossible or even very unlikely that the situation will crop up again, then the distinction loses almost all its point (Armstrong 2000, 80).

For these reasons, we think that Williams misreads Nozick and Dretske, and would have misread Armstrong too: methods must not be sliced so finely that just one situation would constitute a method (otherwise the distinction between true belief and knowledge is lost). For this reason, Williams' Backward Clock Example fails to be a counterexample to Nozick's or to Dretske's accounts of knowledge.

3. Mistakes about Methods

Williams argues at length in "Still Stuck on the Backward Clock" that we misconstrue talk of sensitivity as about method rather than belief. But nothing could be further from the truth, nowhere do we say that. Of course, it is beliefs that are sensitive and adherent, or not. But this does not change the fact that beliefs are sensitive, in part, due to the method used to acquire them. And methods are reliable for tracking the truth or they are not. In that sense, methods make beliefs sensitive because they

constitute a reliable means for acquiring the truth. As Williams correctly notes, we argued that:

What is crucial then, for Williams, is that the mechanism of the clock is held fixed across close possible worlds when considering subjunctive conditionals of the sort that Nozick imposes on knowledge. Unfortunately for Williams and Sinhababu, what needs to be held fixed across possible worlds is not mechanisms but the **method M** for Nozick, or, for Dretske, the **circumstances C** relative to the reasons or evidence R. (Williams 2017b, 257)

Williams goes on to argue that we here commit the fallacy of false dichotomy since we rightfully argue that the **methods** are to be held fixed and so it must be the case that **mechanisms** are not held fixed. But we never said that. We simply argued that the mechanism of the clock need not be held fixed. Williams and Sinhababu conflate mechanisms with methods and hold the former fixed because they hold the latter to be fixed. The deeper reason why mechanisms that are dependent on p are not held fixed is that **that** is the only way to determine whether a belief is subjunctively true as opposed to merely being true. One must be able to track the truth of p across near possible worlds and that is only possible if one allows all those facts that are dependent on p to vary in such worlds. At the same time, one holds fixed all those facts that are not dependent on p. As Dretske says in his early “Conclusive Reasons” account of knowledge:

S knows that p just in case

- (1) S believes that p (without doubt, reservation or question) on the basis of R.
- (2) R would not be the case unless p were the case.
- (3) Either S knows that R, or R is some experimental state [experiential state] of S.
(Clarke, Adams and Barker 2017, 106)

We then noted: “The subjunctive condition, 2, is to be read as saying that: Given R (your reasons or evidence), and fixed circumstances C (all those conditions that are logically and causally independent of the fact that p), then it is not physically possible that not p.” (Clarke, Adams and Barker 2017, 106) That is the theory for Nozick and Dretske behind what is held fixed and what is not held fixed when considering near possible worlds. That is, only those facts causally or logically tied to p are allowed to vary, everything else is held fixed. In this way, one can determine whether p tracks the truth or not. Clearly, the mechanisms of clocks are causally dependent on the time, p, in the sense that a well-functioning clock would be causally constructed in a way that captures the time accurately. Defective clocks, on the other hand, fail in this respect. Dretske makes the same point about thermometers

in his “Conclusive Reasons” paper. So, Williams’ defective clock, by definition, fails to function well. As such, it cannot provide knowledge for the cognizer at 4:30 pm.

4. Charity and Extra-sensitivity

Williams thinks that we accept that S is sensitive to the fact that p, that it is 4:30 pm. As he notes:

I agree that if Nozick had understood matters in the same way when presented with Backward Clock, then he would have seen that his theory is bankrupt. But we should not forget that Nozick was not presented with it. Even had he been, it might have taken him a while to recognize that your belief that it is 4:30 pm is sensitive in exactly his own sense of ‘sensitive.’ After all, Adams et.al. have taken a very long time to reluctantly concede this point. (Williams 2017b, 258)

There are two points to make here. The first is that the belief that it is 4:30 pm is not sensitive in the very same way that Nozick’s account of knowledge requires. Nozick’s account of knowledge says that if p were not true then S would not believe it. This holds, for Nozick, with respect to **ANY p** (not for **ONLY ONE P**). But for a **range** of propositions. This is how Williams misinterprets tracking. So far, so good. In addition, the method used is such that it reliably connects S to the truth. But the method appealed to in Backward Clock is not reliable, in close possible worlds that method does not connect S with the truth. P is not sensitive in the way that Nozick requires. Here, we repeat, the method Williams needs against tracking theories in the clock example is this “looking at the clock at 4:30”. Any wider method fails the tracking conditions. But that narrow method is a non-starter as we pointed out earlier for the same reasons that Armstrong acknowledged long ago. The sleeper in the Backward Clock Example did not adopt that method. For he/she had no idea what time it was when he/she awoke. If that had been a conscious method (because, say, he knew how the clock worked) then he/she WOULD know it was 4:30. But that is not the case.

The second point is that Clarke et.al. do not agree that S’s belief that p in Backward Clock is sensitive in Nozick or Dretske’s sense (contra Williams). Additionally, Williams argues that it is us who are not being charitable to him because we are overly charitable to Nozick. But we can hardly be blamed for being uncharitable to Williams since he has simply misunderstood, in our view, Nozick and Dretske!

At this stage in his discussion in “Still Stuck, on the Backward Clock” Williams suggests that we are ascribing a view to Nozick that he calls ‘extra-sensitivity’ to false beliefs. That is, we are claiming that Nozick thinks that: “S’s belief that p is extra-sensitive just in case were it false, then S would not believe that p **and** (my emphasis)

would not acquire a false belief of the same type other than the belief that p.” (Williams 2017b, 259) Williams denies that Nozick is committed to such extra-sensitivity concerning **false** not-p beliefs. Williams, interestingly, agrees that extra-sensitivity does block Backward Clock but since that is not Nozick’s view, it does not matter. But it is Nozick’s view! Nozick does think that reliable methods track the truth in near possible worlds. Hence, not only does one know that p, and if p were false then one would not believe that p, but one would **not** hold false not p beliefs in those worlds where not p holds true. After all, what else does it mean to say that one’s method tracks the truth in near worlds other than that that method is reliable at getting the truth! This is a crucial point. Williams thinks that only sensitivity of belief is required for knowledge on Nozick’s account of knowledge, not extra-sensitivity. But we think that sensitivity just is extra-sensitivity. Williams has us consider the Fake Dog Occluded by Sheep Example to clarify matters. Here it is:

Directly in front of you where you are looking is a sheep and directly behind it, occluded from your vision by the sheep, is a fake dog that looks just like a dog. Using your reliable vision and memory in ordinary circumstances, you believe that what is directly in front of you is a sheep. (Williams 2017b, 259)

Williams tells us that your belief is sensitive but not extra-sensitive. That is, you believe the object is a sheep and you are right. However, if there was no sheep in front of you then you would not believe there was a sheep there. However, you would have the false belief that there was a dog there. It would be the same kind of belief but it would be wrong. But surely you know that what is actually in front of you is a sheep, says Williams. Hence, the analysis of knowledge cannot require extra-sensitivity since it predicts ignorance where there is knowledge of a sheep.

But Williams is clearly wrong here. If you could not discern a fake dog from a sheep in the circumstances then you don’t know that there is a sheep in front of you. For consider a hybrid of Pappas and Swain’s Generator Example against Dretske’s “Conclusive Reasons” account of knowledge. Call it the ‘Hybrid Generator Example.’ In the original Pappas and Swain example, the lights are on in the neighbourhood and Smith walks into Jones’ living room and the lights are on. But, unbeknownst to Smith, there is a generator in the basement. If the company power goes down, the generator would have went on and Smith would not have known the difference. Pappas and Swain conclude that Dretske’s account is too strong since Smith should be able to know that the lights are on via the companies’ system when they are. But that is not so, says Dretske. The fact that Smith would have believed falsely in the counterfactual case that the companies’ power was causing the lights to be on shows that he does not know in the actual case. Likewise (embellishing the Pappas and Swain Example), if the generator in the basement had been a fake and actually lights

were projected from next door into your living room you **still** would not know that your lights are on when they actually are on. To take another example, Goldman's Fake Barn directly illustrates the same point. Henry is driving through the countryside and notices a Barn. He tells his son: "There is a barn." It happens that there are many Fake Barns in the immediate area since a movie is being created there. The Fake Barns are barn facades, only the front of the barn exists, that is, there are no sides or back to these barn facades. But Henry is looking at a real barn. Clearly, Henry does not know that what he sees is a barn even though it is a barn he is pointing out to his son. Why? This is because he could be viewing a barn façade in that neighbourhood and Henry cannot distinguish a barn façade from a real barn. Fake Generators and Fake Barns can undermine your knowledge of real generators and real barns. Likewise, fake dogs can undermine your knowledge of real sheep if those dogs are indistinguishable from sheep. Nozick's account is **not** too weak. Rather, Williams is mistaken since the Fake Dog Occluded by a Sheep Example is a genuine counterexample: if you cannot distinguish a sheep from a fake dog then you do not know that what you see is a sheep when you are, in fact, looking at a sheep.

5. Equivocation and the Boy Who Cried 'Wolf!'

An objection that we made to Backward Clock is that the signal is too equivocal for there to be knowledge that it is 4:30 pm when it is 4:30 pm. As we noted:

Fourth, there is an accidental connection between the clock display and the belief of the subject awakening from the nap. For any time other than exactly 4:30, the subject's belief during that hour-long period will be false. Why? Because the clock lies for all but one moment during that hour-long period. And worst of all, there is nothing in the signal sent by the clock to differentiate when it is telling the false time from when it is telling a true time.

This should remind one of the "little boy who cried wolf." The boy cries 'wolf' over and over when there is no wolf. Then on the one occasion when there is a wolf and he cries 'wolf,' his cry has become too equivocal, no one can tell from his cry that a wolf is actually there on that one occasion. His cry of 'wolf' still means wolf, but it does not carry the information that there is a wolf. Similarly, the clock's face emits false testimony for 59 minutes during that hour from 4:00 to 5:00. (Adams, Barker and Clarke 2016, 358)

Williams objects to this point by saying that clocks do not lie, people do. Secondly, the clock's designers did not have deceitful intentions because it is an accident that the clock's mechanism works this way. But these points ignore the fact that we intend the term 'lie' to be taken as a kind of metaphor, not a literal attempt at lying. Of course, clocks themselves do not literally lie. Williams then points out that Adams et. Al. claim that Backward Clock and Stopped Clock;

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...don't really **SAY** anything about the time, even though they continue to **DISPLAY** the time and appear to **SAY** something about it. (Clarke, Barker and Adams 2017, 110)

Williams claims that if the clock does not say anything about the time, then it could not be saying anything that is false. Clearly, in this instance, we are asserting that the clock **displays** lies (or falsehoods) and **says** nothing. There is no contradiction involved in this.

But Williams does agree that there is nothing in the signal, i.e., the position of the hands of Backward Clock, to differentiate when it is telling the truth and when it is not. Williams then points out that there is a major difference between the Boy and the Clock: the Boy cannot be trusted since he lies but the Backward Clock does not lie, for it was always perfectly reliable when you were awake. The inductive evidence is very strongly in favor of its accuracy and then you awake and it is true that it is 4:30 pm. Hence, you should trust it. So Williams claims that the analogy fails. However, our claim is that the evidence as **displayed** by the clock from 4:00 to 5:00 is equivocal, evidence that you are not aware of except for a moment at 4:30 pm. **That** is where the analogy with the Boy is located, not with earlier times. That is, the clock **itself** is like the boy (it lies), it is not the observer of the clock that is like the boy (since the observer does not lie). The issue is not about what, or who, one can trust but about the reliability of the **source**. Neither the Boy nor the Clock are reliable sources and so they cannot transmit knowledge. Hence, Williams is simply wilfully misrepresenting our argument.

Finally, Williams addresses our main point about the signal being too equivocal by saying that even if the signal is equivocal, that this plays into his hands because the belief that it is 4:30 pm is both sensitive and adherent despite the method being unreliable for acquiring the truth at every time other than 4:30 pm during that hour. As he notes:

The fact remains that your belief that it is 4:30 pm is both sensitive to falsehood and truth-adherent. In their reply, Adams et. Al. tried to evade this result by claiming that your method of ascertaining the time you wake, is too 'equivocal' in such a way that prevents your method from being truth-tracking, and knowledge requires truth-tracking methods." (Williams 2017b, 262)

To prevent an equivocal signal, Williams notes that we assert that truth-tracking signals require a solid truth-tracking method and those methods must be reliable. As Williams says: "Now they have dropped talk of truth-tracking methods in favour of talk of reliable methods. So perhaps they wish to argue that your method of ascertaining the time you wake is 'equivocal' in such a way that prevents your

method from being reliable, and knowledge requires reliable methods.” (Williams 2017b, 262-263) Of course this is exactly what we want to say.

6. The Appeal to Reliable Methods

We now come to the heart of our difference with Williams concerning the interpretation of Nozick’s account of knowledge. Williams denies that Nozick is presenting, in effect, a Reliable Indicator account of knowledge. On such accounts, one’s belief that ‘p’ is a reliable indicator that p. Reliable indicators are such that, for instance, on Dretske’s early “Conclusive Reasons” account of knowledge: ‘Given R, your reasons or evidence, and fixed circumstances C, it is not physically possible that not p.’ As such, a very strong condition on knowledge is imposed. Nozick, Dretske and others have defended such accounts. These accounts are to be contrasted with Reliable Process accounts of knowledge. Goldman defended a reliable process account of epistemic justification. On such an account of epistemic justification, if the belief is caused by a reliable process then it is justified. If, in addition, the belief is true then one has knowledge. As such, it becomes a reliable process account of knowledge. On Goldman’s account the belief must have a suitably high degree of likelihood of being true to be justified. However, the probability need not be 1 on a scale of 0 to 1. As such, this account is much less demanding than Nozick or Dretske require. On their accounts of knowledge, one only knows **if** in the **fixed circumstances C**, it is **not physically possible** that not p while one believes that p via method M (Nozick) or reason R (Dretske).

Truth-tracking, for Nozick, is very demanding. Of course, the cognizer can be totally unaware of such matters on both kinds of accounts since they are externalists about knowledge (as is Goldman). Now Williams understands that this is our interpretation of Nozick and Dretske but he explicitly denies that Nozick is committed to such an account. As he says: “The term ‘reliable’ does not appear in Nozick’s analysis, as formulated above.” (Williams 2017b, 263) Williams first clarifies our view quoting us:

...all visual perception beliefs, all beliefs of that type about her Grandson, must be reliably produced by that method for the Grandmother under those circumstances in order for her to know that p.” (Williams 2017b, 263)

This commits us, according to Williams, to the following condition on knowledge which he calls ‘ABC reliability’:

S knows that p, using method M of arriving at a belief whether p of type T, only if all beliefs of type T are reliably produced by M. (Williams 2017b, 263)

Williams then notes that we assert that:

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Tracking the truth presupposes the **reliability** of the **method** for producing truth. Reading the account in any other way is simply a misreading of Nozick. (Williams 2017b, 263)

Williams then rightly points out that we do not add this last claim as an extra condition on knowledge but something that is built into Nozick's account of knowledge. On this point, he is correct. Williams then goes on to claim that:

But there is no textual evidence that Nozick embraces ABC reliability. Indeed there is textual evidence that he does not. Long after Nozick has finished elucidating his truth-tracking analysis of knowledge, he turns to a different topic, namely evidence and justification. Here he mentions reliability for the very first time, not as part of an analysis of knowledge, but as part of an analysis of justified belief. He holds that S's belief that p, using method M, is justified if M is reliable, in other words, "is likely to produce mostly true beliefs." Let us call this condition 'Nozick reliability' as follows.

S's belief that p, using M, is justified if M is reliable, that is, is likely to produce mostly true beliefs. (Williams 2017b, 263-264)

Williams points out that for Nozick, truth-tracking is a property of beliefs, while reliability is a property of methods. But knowledge does not, Williams says, involve any appeal to reliability at all. But how could this be the case? Nozick builds method M into one of his formulations of the criteria of knowledge. If reliability is a property of methods for Nozick, it follows automatically that reliability plays a role in the acquisition of knowledge since methods must be very reliable if they are to track the truth. This is also evident with Dretske's "Conclusive Reasons" account of knowledge where tracking requires "nomic" true beliefs. That is, S knows that p if and only if given your reason or evidence R and fixed circumstances C, it is not physically possible that not p. The reliability of the connection between R and p in fixed circumstances C, is such that it is not nomically possible that not p. This is a very demanding notion of reliability, nomic or "law-like" reliability. As such, it is much stronger than Goldman's claim that one's belief, if true, need only be the result of a process that produces "mostly" true beliefs in order to secure knowledge that p. Our view is that Goldman's account of knowledge is, therefore, too weak for an account of knowledge. Goldman's account of knowledge here derives from his reliable process account of epistemic justification.

At any rate, Williams goes on to discuss Nozick:

He ponders 'a stronger notion of reliability, one wherein the application of a method reliably yields knowledge (tracking) rather than simply truth.' He never pursues this notion. Indeed it is difficult to see how we are supposed to derive ABC reliability from Nozick reliability. (Williams 2017b, 264)

The point to notice here is that in this later section of Nozick's book he is talking about evidence and justification. He is clarifying how one might arrive at a reliable process account of justification akin to the sort of view that Goldman defends. But this is a separate issue from the analysis of knowledge. Hence, of course, reliability in the sense of a reliable process account of justification is a **different direction** from the analysis of knowledge that Nozick is pursuing. This is confirmed when Nozick tells us the following.

When tracking holds, if it is true (false) you would (not) believe it-when reliability holds, if it is believed (by the method) then it (probably) would be true. It is important to keep these directions distinct. (Williams 2017b, 264)

Williams goes on to say that it is unclear whether either direction entails the other. As he notes:

In Backward Clock, your method of forming beliefs about the time is unreliable; since you can wake at any time during the hour that you nap, it is not likely to produce mostly true beliefs. Nonetheless by using that method at 4:30 pm you form a belief that tracks the truth. (Williams 2017b, 264)

But the claim by Williams here involves a reliable process notion of justification and that, most decidedly, is not germane to knowledge. But it does not follow from that fact, that truth-tracking does not require for its explication the reliability of the method M, understood in the objective sense (unbeknownst by the cognizer). Nozick builds his analysis explicitly by appeal to such methods M that track the truth. Such methods M can only track the truth if they are reliable. Otherwise, knowledge would always be an accidental matter which it assuredly is not. And that is why true beliefs must track the truth to produce knowledge and why tracking the truth involves reliable methods. If this were not true, one could never have more than merely accidentally true belief. Nozick must explain why truth-tracking is essential to knowledge and that explanation cries out for an appeal to reliable methods or all humans could ever produce would be luckily true beliefs. It is also notable that Williams cannot even discuss methods without reference to reliability in the quote. No one could. The mere fact that Nozick does not use the term 'reliability' in his analysis of knowledge is, therefore, mute. He uses the term 'method' and connects that term with truth-tracking with respect to p. Reliability is, therefore, implicated in the analysis as most commentators have acknowledged down the decades.

7. Why Dretske's Early Analysis Remains Intact

Williams argues that Dretske's early "Conclusive Reasons" account of knowledge is too weak and bases his judgement on the Backward Clock example. He formulates Dretske's account as follows.

S knows that p in circumstances C just in case

- (1) S believes that p (without doubt, reservation or question) on the basis of R.
- (2) In C, R would not be the case unless p were the case.
- (3) Either S knows that R, or R is some experiential state of S. (Williams 2017b, 266)

Williams illustrates Dretske's account with the following example of Dretske's.

In circumstances in which you have shaken your mercury thermometer down, and in which it does not stick, you place it in your child's mouth, extract it after several minutes and observe a reading of 98.6 F. You know that the thermometer reads 98.6 F. On this basis you believe without doubt, reservation or question, that the temperature is 98.6 F. (Williams 2017b, 266)⁷

So, in these circumstances, the thermometer is reliable as an indicator of actual temperature. As Williams notes about this thermometer:

The rise and fall of its column of mercury is deterministically and predictably correlated with the temperature it indicates. So it is also reliable in the way its mechanism operates. These circumstances are logically and causally independent from the temperature being 98.6 F. The fact that your thermometer is shaken-and-not-sticky neither entails nor causes the actual temperature to be 98.6 F. Conversely, the temperature being 98.6 F neither entails nor causes your thermometer to be shaken-and-not-sticky. So far so good for Dretske (Williams 2017b, 266-267).

At this point, Williams cleverly constructs a parallel case to the thermometer example with his Backward Clock example. You observe that the clock reads 4:30 pm given the position of its hands and so form that belief without doubt, reservation or question. You base your belief on:

...your conjunctive reason that the hands point to 4:30 pm and your clock has always worked perfectly reliably. But this conjunction would not be true unless it were 4:30 pm, because the hands would not point to 4:30 pm unless it was 4:30 pm. This is because the circumstances in which you find yourself include those in which the clock runs perfectly reliably backwards from 5:00 pm to 4:00pm. Finally, we stipulate that you know the conjunction that the hands point to 4:30 pm and your clock has always worked perfectly reliably. (Williams 2017b, 267)

⁷Williams indicates that this is a slight embellishment of Dretske's example from "Conclusive Reasons."

Williams concludes that Dretske's conditions (1)-(3) are satisfied here but that you do not know that it is 4:30 pm. Hence, Dretske's conditions on knowledge are too weak. Now, clearly, Dretske would not want to admit that his conditions are satisfied since the belief is too weak for knowledge. But are Dretske's conditions satisfied? We think not. Williams uses the term 'reliable' in two ways in his example. In one use, it refers to the observer's belief that the clock is reliable in the usual sense of the word, it functions like normal clock. But, later, in the example 'reliable' refers to the way that Backward Clock functions, i.e., it runs backwards from 5:00 pm to 4:00 pm. Clearly, reliable clocks don't function in two distinct ways in succession. This would be to have normal clock followed by backward clock, followed by normal clock. Hence, we would have a defective clock just as Dretske denied knowledge if one were to be reading a defective thermometer. Hence, Williams' example fails to be a counter-example to Dretske's "Conclusive Reasons" account of knowledge. The fact that the Backward Clock changes in mid-stream shows that it is a defective clock. Its purported reliability is no such thing. The bit of dust that caused the bug in the clock might have affected the clock in a different way such that the clock was defective in other ways. At best, the fact that the clock displays 4:30 pm at 4:30 pm is a lucky accident. Hence, Dretske would say that it was physically possible that the clock read some other time than 4:30 pm at 4:30 pm. Since that is the case, the Backward Clock is not reliable.

8. Concluding Remarks

Despite three very interesting and clever attempts in three papers to defeat Nozick's account of knowledge and Dretske's account of knowledge, we think Williams has failed to deliver the goods. The Backward Clock example fails to be a counter-example to those accounts of knowledge. The other objections that Williams offers to our most recent paper also fail or are misrepresentations of our views.

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