

Science and Ethics: Demarcation, Holism and Logical Consequences

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Abstract: I argue that attempts to demarcate ethics from science are not jeopardized by the fact that conjunctions of moral claims may have empirically verifiable logical consequences

Philosophers have often wanted to state a principled way of demarcating empirical from non-empirical thought. This was a major concern of the Vienna Circle. In my view, this is an important intellectual project. Although it is not so common now to address the issue directly, it hovers in the background of many discussions.

Non-empirical thought comes in different kinds. Perhaps some is a priori. Common candidates are mathematical, logical, modal and moral thought. Some non-empirical thought might be non-cognitive. Common candidates are moral, aesthetic and religious thought. Or some non-empirical thought might be pseudo-empirical. Common candidates are astrological, theistic, Marxist or psychoanalytic thought; such thought masquerades as empirical, but in fact is not. These are all ways that thought can fail to be empirical.

Here I shall focus for the most part on the case of morality, where there has been a lively debate about the empirical status of moral thought. I shall probe the prospects for a demarcation principle that can be used to decide whether or not moral thought is empirical. Some philosophers have recently presented what seems like a compelling case for thinking that moral thought is empirical, and so engaging with their arguments will raise the issue of what the empirical/non-empirical distinction amounts to, and also the issue of how to tell which forms of thought are empirical and which are not.

1. Holism and Epistemic Status

Many philosophers hold that moral judgements are not empirical: they have held that there is no empirical moral knowledge and that moral beliefs are not empirically justified. This much is agreed between non-cognitivists (like Charles Stevenson, A. J. Ayer, R. M. Hare and Simon Blackburn), who deny that moral thinking is a matter of belief or knowledge, and cognitivists (like G. E. Moore), who reach for a non-empirical epistemology. However, this shared assumption has been challenged by Nicholas Sturgeon, David Brink, and others, who have sought to show that we have some empirical moral knowledge and that some moral

judgements are empirically justified (Sturgeon 1985; Brink 1989). Metaphysically, these thinkers hold that moral facts are identical with, or constituted by, natural facts, such as psychological or social facts; and epistemologically, they hold that moral judgements are beliefs about these moral facts, some of which amount to empirical moral knowledge and some of which are empirically justified.

Crucial to the case for the empirical status of moral thought is the appeal to the holistic or coherentist idea that we test particular claims in the light of other 'auxiliary' claims. Since this is generally true, they argue that we should not insist that moral beliefs face the test of empirical respectability by themselves; for, as Duhem, Neurath and Quine showed, no beliefs do that. Sturgeon and Brink think that when we see that moral beliefs are accepted in conjunction with other beliefs, we will see that they can and do have indirect empirical status. On this view, although perceptual experiences may not have moral content, beliefs about morality are like scientific beliefs about unobservable entities that we postulate in order to explain the behaviour of phenomena that are observable, where being observable implies that we represent them in perceptual experience. This can be classified as a case of what is known as 'inference to the best explanation' (Harman 1965). For Sturgeon and Brink, in both ethics and science we deploy the standard scientific methodology of inference to the best, or to a good, explanation. And that means that the justification of moral beliefs is empirical. Moral facts are postulated as an inference to the best explanation in the context of other sorts of beliefs. And such moral beliefs contribute to the explanatory coherence of our beliefs. Some philosophers of mathematics take a similar view—Quine's indispensability argument is of this sort. Not many mathematical realists appeal to mathematical perceptual experiences. Some empiricists about religious belief also think that belief in God can be justified by inference to the best explanation—the cosmological and teleological arguments are of this sort. Other theistic empiricists appeal directly to religious experience (Alston 1991). The appeal to moral experiences is not very common among moral empiricists, although some seem to embrace that idea.

I shall argue that we should be circumspect about the appeal to holism and coherence. By itself it does very limited dialectical work. All it does is to establish the modest negative point that the fact that there are no moral experiences does *not* show that moral beliefs are *not* empirical. But that does nothing to contribute to the positive case for the empirical status of moral beliefs. The appeal to holism and coherence is merely a gesture towards a theoretical possibility rather than a reason to believe that moral beliefs actually are empirical.

It is not implausible that moral beliefs do indeed form a system and that particular moral beliefs are only accepted if they cohere with other moral beliefs. Nevertheless, this does not encourage the view that they have empirical status. For we can easily imagine an a priorist about mathematics saying that there is an interconnected holistic web of mathematical beliefs that mutually support each other but which are all a priori. And a theologian might say the same about a holistic web of mutually supporting theological beliefs. Furthermore, suppose that moral beliefs cohere with a certain kind of non-moral beliefs. This could only

tell us the epistemic status of moral beliefs only if we knew the epistemological status of the other elements of the web of belief to which moral beliefs are coherently related. Perhaps mathematical beliefs are held in the light of logical beliefs, and vice versa, *both* of which are a priori. What needs to be shown is that moral beliefs are bound up with non-moral items in the web of belief that are known or justified empirically.

Since the appeal to holism and coherence merely makes room in principle for the idea that moral beliefs are indirectly empirically supported or disconfirmed (if their negation is confirmed), we need a positive reason to believe that moral judgements actually instantiate this theoretical possibility.

The argument for this positive claim that is the focus of this paper is the appeal to moral claims that seem to have uncontroversially empirically testable logical consequences when taken together with background hypotheses. There seem to be examples of moral arguments that take us from moral premises to non-moral conclusions that are obviously testable. These moral arguments are supposed to demonstrate that moral beliefs do in fact have uncontroversially empirically testable logical consequences. And if moral beliefs have uncontroversially empirically testable logical consequences then it seems that they are justifiable on empirical grounds, in the sense of being supported (or disconfirmed) by those logical consequences. Sturgeon and Brink have argued in this way.

They also appeal to moral facts (that is, instantiations of moral properties) that are intuitively causally efficacious. For example, Sturgeon says that our belief that slavery is bad is caused by the badness of slavery. And he thinks that Hitler's evil both caused many deaths as well as causing our beliefs about his evil (Sturgeon 1985). However, it is important to separate the appeal to observable logical consequences from the appeal to intuitive causal efficacy, even if the same examples seem to invite both kinds of analysis. My view about the second kind of examples is that while it is true that moral facts have causal efficacy, this does not show that they are causally efficacious with respect to our beliefs about them. There is good reason to think that our moral beliefs could not be causally sensitive to moral facts, despite the causal efficacy of moral facts. I pursue this elsewhere (Zangwill 2005). But this issue is not the same as the one that is raised by the *inter-relation of our beliefs*. (It is true that issues about the inter-relation of our beliefs are not entirely separate from the causal efficacy issue; for a commitment to the causal role of moral facts may make a difference to the *kind* of coherence that we think holds among our moral beliefs. Perhaps coherence is *causal-explanatory* coherence. But we need examples of causally efficacious moral properties to show that. The appeal to logical consequences, as we shall see, does not suffice.)

Sturgeon gives the following example: (1) Hitler was a morally admirable person; (2) no morally admirable person would kill millions of people; therefore (3) Hitler did not kill millions of people. But since we have empirical evidence that he did, Sturgeon thinks that we have empirical evidence against one of the premises. And he thinks it is obvious which one we ought to reject (Sturgeon 1985: 232). Brink argues similarly that from the moral premise (4) Zenobia is a good person, plus another moral premise (5) good people keep promises, we can infer

the empirically verifiable conclusion (6) Zenobia will keep her promises (Brink 1989: 184). According to Sturgeon and Brink, these arguments invite a coherentist and inference to the best explanation interpretation of the justification of moral beliefs. The moral hypotheses and the observable conclusion cohere; and the observable consequence is what is explained and the moral hypotheses explain it.

I will argue that these examples of moral arguments do not and could not by themselves show that moral beliefs cohere with non-moral beliefs in such a way as to make them empirically justified. The analysis of the moral arguments is questionable. Having done that, I diagnose the underlying epistemic principle that blocks the inference. More general issues about scientific theory testing are then broached. The conclusion is that we need some other reason to believe that moral judgements are empirical, apart from the fact that they have observable consequences when taken together with auxiliary hypotheses. In general, the fact that a theory has empirical logical consequences is an unsatisfactory criterion of empirical epistemic status. Moreover, we will see that there is a principled reason why this is so.

2. Promiscuity and Premise-Reversal

The first point to notice about the appeal to logical consequences plus auxiliary hypotheses is that its consequences seem to be too promiscuous; similar arguments allow that just about any entities and properties are justified empirically. Suppose that Zoë believes that Hermione has a cool aura. And suppose that Zoë also believes that those who have cool auras tend to wear purple clothes. Then Zoë can deduce the empirically testable consequence that Hermione tends to wear purple clothes. But that surely does not show that Zoë's beliefs about Hermione's aura are empirically supported by Hermione's wearing purple clothes. Again, suppose that Victor believes that the number two is prime, and he also believes that if the number two is prime then it will rain. The presence or absence of rain surely does not support Victor's mathematical belief that the number two is prime.

This point should seem familiar. Isaiah Berlin famously objected in just this way to A. J. Ayer's attempt to explicate the verification principle in terms of the observable logical consequences of theories (see Berlin 1950: 19; Ayer 1946: 15). Ayer's verification criterion was supposed to be a way of demarcating sense from nonsense, rather than empirical from a priori. His principle had the unfortunate consequence that 'The absolute is lazy' is empirically verifiable. What we need in metaethics is similar: we need a general way of demarcating theories that are empirically supported from those that are not, so that we can place moral theories in one category or the other. The issues are close cousins.

We can recast, or perhaps refocus, what lies behind this worry about promiscuity as a worry about 'premise-reversal'. Why is Sturgeon so confident about which premise to reject in the Hitler argument? Why reject (1) rather than (2)? Consider the argument we get if we replace the moral predicates by their

contraries: (1*) Hitler was a morally bad person; (2*) no morally bad person would kill millions of people; therefore (3) Hitler did not kill millions. Why is this argument not just as bad or good as the argument that Sturgeon considers? It has the same empirically testable consequences. So it seems that we could be justified in accepting that Hitler was morally good on the empirical evidence that we now have if we were to change our background belief and think that killing millions of people makes someone good. Similarly, in Brink's Zenobia example, the conclusion (6) that Zenobia will keep her promises follows just as well from the premises (4*) that Zenobia is a bad person and (5*) that bad people keep their promises. Thus it seems that the reference to the moral property itself is playing no real explanatory role in either argument. Sturgeon mentions another structurally similar argument in passing (Sturgeon 1985: 231–32). He argues: (7) Wrong actions produce pain; (8) it is wrong to kill human beings; so (9) killing humans causes pain. He then says that this conclusion is empirically testable. It is a testable consequence of a moral hypothesis together with an auxiliary moral hypothesis. But we can reverse the premises: (7*) right actions produce pain; (8*) it is right to kill human beings; (9*) killing humans causes pain. Why is this argument not just as good? If we want to explain the fact that killing humans causes pain, positing wrongness seems to have no explanatory benefits since positing rightness would have done just as well if combined with different auxiliary hypotheses. As in the other cases, the moral propositions in the premises cancel each other out. And the same is true of the aura and mathematics arguments. We could just as well accept that that if someone has an *uncool* aura then they tend to wear purple clothes, or that if the number two is *not* prime then it will rain. Of course we might think that (2) is more plausible than (2*), or (5) is more plausible than (5*), but the question then is why we think this, and whether we think it on the basis of such arguments with uncontroversially empirically observable consequences.

If we can reverse the premises while leaving empirical consequences unchanged, then one possibility is that is that the two premises have empirical contents that dovetail, or match, so that it makes no empirical difference whether they are jointly asserted or their negations are jointly asserted. But another possibility is that *neither* of the premises have empirical content. Thus far, we have no reason to favour either of these two possibilities.

3. Auxiliary Hypotheses and Independent Evidence

Ian Hacking, Philip Kitcher and Peter Kosso express a general worry with certain standard theories of empirical confirmation, which is the generalisation of the promiscuity worry with the examples we just considered. They worry that admitting auxiliary hypotheses and a degree of holism in science opens the floodgates to all sorts of unscientific nonsense. Kitcher gives the following (Berlin-style) example of a mystical saying which might appear to have observable consequences: Quietness is wholeness in the centre of stillness; if

Quietness is wholeness in the centre of stillness then flowers bloom in spring; so flowers bloom in spring (Kitcher 1982: 43). Surely this does not mean that the belief that Quietness is wholeness in the centre of stillness is empirically justified because it entails something observable when taken together with an auxiliary hypothesis. Hacking, Kitcher and Kosso all attempt to close the floodgates in the same way: they appeal to the idea that in genuine science there is *independent evidence* for auxiliary hypotheses. For example, the observation of planets that we make with telescopes depends on our optical theories about how telescopes work; and the observation of parasites that we make with microscopes also depends on our optical theories about how microscopes work. But the empirical evidence for the theories of optics is independent of the theories of parasitology or astronomy (Hacking 1983: chapter 11; Kitcher 1982: chapter 2; Kosso 1992: 155–63). Similarly, to use to use an example of Gilbert Harman's (Harman 1977: chapter 1), if we use a cloud chamber to find out about protons, we rely on an auxiliary theory about how cloud chambers work; but we have independent evidence for that theory. Thus it might be argued that what is absent in Sturgeon and Brink's examples of moral arguments with observable conclusions is any reason to think that the auxiliary moral conditional hypotheses are supported independently of the moral hypothesis in question. For example, the moral belief that Hitler was evil and the moral belief that killing millions of people makes someone evil seem to be equally controversial and not too distant from each other. They stand or fall together. But the theory of optics does not stand or fall with the theory of parasitology or astronomy. This is the reason *why*, in the scientific cases, we cannot reverse the premises without cost. That is, the premises cannot be reversed in a scientific case because of the independent evidence for the background auxiliary premise. So, it might be suggested that the appeal to independent evidence serves to distinguish Sturgeon and Brink's arguments from empirical arguments—which would be bad news for them.

Sturgeon and Brink might reply that the belief that killing millions is wrong *is* justified independently of the belief in Hitler's evilness. For Hitler is not the only instance of such a principle; he wasn't the only person to kill millions. Moreover, there are other ways of being evil. Sturgeon and Brink might say that we *do* have independent grounds for each of the premises. So they might say that their arguments pass the independent evidence test, and they can accept Hacking, Kitcher and Kosso's requirement that there should be independent evidence for auxiliary hypotheses.

However, this does not circumvent the difficulty. In the Hitler/Zenobia cases, all sides should agree that we need independent grounds for thinking that it is morally bad to kill millions of people or that good people keep promises. The question is whether those independent grounds are independent *empirical* grounds. In uncontroversially scientific cases, it is clear what the independent grounds are and it is uncontroversial that they are empirical. So the *reason* we cannot reverse the premises at will is that there is independent empirical evidence for each of the premises. And in the scientific cases, it is clear and uncontroversial what the independent empirical evidence is that prevents or at

least inhibits premise-reversal. By contrast, in the moral cases, although there may be some factor preventing or inhibiting premise-reversal, we lack any reason to believe it is an empirical factor. This is a significant asymmetry with uncontroversially empirical scientific arguments. In scientific cases, we have positive reason to think that the auxiliary premises are empirically supported. We can imagine, and sometimes say, what sorts of observations are relevant to the auxiliary premise, which are not relevant to the main premise. But in the moral cases, the auxiliary premises are further moral premises that seem on the face of it to be just as immune to empirical support as the main premise. Moreover, we have no inclination to think that the auxiliary moral premises are tied to different observations from the main moral premises. And this is unlike the uncontroversially scientific cases where we can easily imagine and often say what different observations are relevant to the main premise and to the auxiliary hypothesis. So Sturgeon and Brink cannot say that the dialectical situation at this point is a draw on the grounds that it is equally true that the premise-reversal test does not show that the moral arguments are not empirically supported. For ethics is unlike science in that it is much more obvious what observational evidence is relevant to the main and auxiliary premises and it is much more obvious that the observational evidence relevant to each is different.

4. Epistemic Status Closure

It might reasonably be objected that, in spite of what has been said so far, there remains something odd about denying that two moral premises have empirical status when they imply a conclusion that is uncontroversially empirically verifiable (in the sense that we can observe whether or not it is true). It would be useful to have a general understanding of what is going on here. Until we have such a general understanding, we can sympathise with the thought that there is a presumptive case for Sturgeon and Brink's analysis.

I offer the following diagnosis. By 'epistemic status' let us mean the classification into empirical or a priori. Thus knowledge can be empirical or a priori; a belief might be justified empirically or a priori; and a proposition might be knowable or justifiably believed empirically or a priori. The issue we need to broach is whether epistemic status is *closed under logical consequence* or *closed under logical derivation*. The closure under logical consequence of the epistemic status of belief means that if the belief that p has a certain epistemic status and q is the logical consequence of p , and p is believed, then the belief that q has the same epistemic status as that belief that p . And the closure under logical derivation of the epistemic status of belief means that if the belief that p has a certain epistemic status and p is the logical consequence of q , and q is believed, then the belief that q has the same epistemic status as that belief that p . What is important is that if these closure principles fail then it is possible that premises that are *not* empirically testable imply a consequence that *is* empirically testable. It is often assumed that epistemic status is closed under logical consequence and

derivation. But this has absurd consequences, as we can see in the aura and mathematics examples. If we deny the epistemic status closure principles, we can resist any pressure that the Hitler and Zenobia examples might exert in favour of an inference to the best explanation account of the knowledge or justification of moral hypotheses. For it is possible that the categorical and conditional premises of those arguments are *not* knowable or justifiable on empirical grounds, even though they logically entail a claim that *is* knowable or justifiable on empirical grounds.

A familiar moral here for theories of empirical confirmation is that the obtaining of the logical consequences of a theory or set of theories is not always evidence for it or them; the obtaining of those consequences does not always confirm the theory or theories, and it does not always justify believing it or them on the basis of an inference to the best causal explanation (see further Glymour 1980: chapters 2 and 5; and Lauden 1995). The contents of two beliefs that have one epistemic status may entail the content of another belief that has a different epistemic status. (A prosaic example running the other way would be that the proposition that it is raining, which is not knowable a priori, entails that either it is raining or $p \rightarrow p$, which is knowable a priori.) It is controversial whether *knowledge* and *justification* are closed under known logical entailment (Dretske 1970; Nozick 1981; Vogel 1990). But it is relatively uncontroversial, I think, that *epistemic status* is not closed under logical consequence or derivation (known or not). Given this fact, Sturgeon and Brink's Hitler and Zenobia moral arguments are not even *prima facie* cases where moral premises are empirically supported. Moral beliefs may form a holistic set. They may cohere with one another and even with non-moral beliefs. But the Hitler and Zenobia arguments provide no reason to believe that the holism is empirical holism and that the coherence is empirical coherence.

Nevertheless we can imagine someone persistently protesting that if a holistically inter-related and coherent set of claims jointly has a logical consequence that is empirically knowable or justifiable, how could it not be that the set is empirically supported by the fact that its logical consequences obtain? And how could the set not be empirically disconfirmed by the fact that its logical consequences fail to obtain? To defuse this recalcitrant protest, it is not sufficient just to deny the epistemic status closure principles. The rejection of those doctrines needs to be justified. Those who maintain such doctrines must explain why they hold and those who reject them must explain why they fail. Or if they hold in some cases but not others, we need to explain why.

Let us call this empirical-making characteristic of beliefs 'E'. The important point for the demarcation issue is that there can be two beliefs with properties E, the contents of which logically entail something observable, and there can be two beliefs without property E, the contents of which also entail something observable. This is because all that logical consequences require is a certain kind of content structure: the presence of logical constants, and the recurrence of semantic items bound (in the relevant way) by the logical constants. Whether or not the two beliefs that have contents that stand in such semantic structural relations must also share the empirical making characteristic E is another matter.

Sturgeon also has his examples of apparent causally efficacious moral properties (for example, Hitler's badness caused many deaths), and those examples might provide *independent* support for the claim that the logical entailment relations between moral theories hold in virtue of the recurrence of semantic items that if believed would have property E. But without the appeal to efficacy, the mere existence of moral arguments with empirically knowable consequences does not show that. So those examples of moral arguments by themselves do not show that moral theories are empirical.

Moral realists, like Sturgeon, place great emphasis on the coherence of moral theories with the rest of our beliefs. But, contrary to what they say, we can now see that this appeal does nothing to make it plausible that such theories are empirical. All the work in this direction is done by the appeal to examples of moral properties that are intuitively causal efficacious. The appeal to coherence merely helps address the fact that we do not seem to have perceptual experiences with moral content. It is true that *that* fact does not show that moral theories are *not* empirical. But the appeal to coherence and the fact that moral theories are deductively tied to claims that are uncontroversially empirical provide no positive reason to believe that moral theories *are* empirical.

The scenario in the philosophy of mathematics and logic is somewhat different. For there is little intuitive appeal in the idea that mathematical or logical objects and properties have causal efficacy. The appeal to coherence, by itself, in these areas is just as unimpressive as it is in morality. And given that mathematical and logical things and properties intuitively lack causal efficacy, it means that the case for mathematical and logical empiricism seems to be in poor shape. However, indispensability arguments, inspired by Quine, and recently refashioned by Mark Colyvan, have made progress by arguing that purely mathematical facts are part of the *explanations* of physical facts or events (Colyvan 2001: chapter 3). This argument is not merely an appeal to the logical deduction of testable claims. It is an appeal to the explanatory role of mathematical facts. The mathematical semantic items do not merely entail something observable, they also explain it. There remains a puzzle about how exactly abstract objects *can* play an explanatory role with respect to physical facts, given their acausality. But that, at any rate, is how the most impressive indispensability argument proceeds. The conclusion we can take from this is that in order for the argument to work, the coherence of mathematical theory with other theories must be explanatory coherence and not merely an entailment relation holding between mathematical claims and empirically verifiable non-mathematical claims.

5. The Explanation of Epistemic Status Closure Failure

There seem to be intuitive examples of the failure of epistemic status closure for *justification*, as well as knowledge. [It is raining] logically entails [either it is raining or $p \rightarrow p$], but belief in the former is not knowable or justifiable a priori

while belief in the latter can be knowable or justifiable a priori. Still, plausible examples of status closure failure do not explain it. *Why* does it fail?

To pursue this, we need to proceed directly to the heart of what makes for epistemic status. We must ask about the *metaphysics of epistemology*—that is, about the metaphysics of knowledge and of the property of being justified in believing something.

Let us begin with knowledge. A useful and intuitively appealing characterisation of the *empirical* epistemic status of items of knowledge is this: a belief amounts to empirical knowledge only if it postulates objects, events, properties, relations or facts that stand in causal relation—directly or indirectly—to our beliefs about them (McGinn 1975–1976). For example, instantiations of the property of having positive charge in part cause our beliefs about such instantiations. This is what gives beliefs about positive charge empirical epistemic status. By contrast, on most views, mathematical entities do not stand in causal relation—direct or indirect—to our beliefs about them; they cannot do so, given that they have no (positive) causal properties. So if we know about mathematics, that knowledge is non-empirical or a priori (Benacerraf 1973; McGinn 1981).

What about coherentism about scientific knowledge? (We have put aside for the moment the question of coherentism about *justification*.) The empirical epistemic status of holistically enmeshed scientific knowledge dovetails nicely with this broadly causal account of the difference between empirical and a priori knowledge. If one fact has causal efficacy and it combines with another fact that also has causal efficacy, then those two facts can jointly cause the belief in the conjunction; and the conjunction is then empirically knowable. (The conjunction of two causally efficacious facts is also causally efficacious (Zangwill 2003).) By contrast, a fact that is *not* causally efficacious obviously cannot directly or indirectly cause our beliefs about it; and equally obviously *two* facts that are not causally efficacious cannot jointly cause the belief in the conjunction of those two facts. What is important for us is that whether or not those two facts *logically* entail a fact that *is* causally efficacious, and thus is a fact that is empirically knowable, is beside the point. That does not make the two original facts any more causally potent.

An interesting special case is the conjunction of a causally efficacious fact and a non-causally efficacious fact. For example, a physical fact might be conjoined with a mathematical fact. I believe that such conjunctive facts *do* have causal efficacy, and can have causal efficacy with respect to our beliefs about them, in virtue of the causally efficacious conjunct. But it does not follow that knowledge of these conjunctive facts is empirical. The mere fact that the conjunction of a mathematical fact and a physical fact has causal efficacy does not mean that we can know the conjunction empirically and hence know the mathematical fact empirically. However, if there were an explanatory connection between the conjuncts, then the situation would be different. This is the scenario that Colyvan envisages. In such a case, knowing the causally efficacious conjunct plus the explanatory connection could in principle yield empirical knowledge of the non-causally efficacious conjunct.

The real epistemological issues here are about *causal* and *explanatory* consequences not *logical* consequences. The appeal to logical consequences muddies the waters of epistemology. In the standard examples of holism in the philosophy of science, where a scientific theory plus an auxiliary hypothesis logically entail something observable, both theory and auxiliary hypothesis postulate causally efficacious facts, which in conjunction make it the case that some third fact obtains, which is causally efficacious, and which is thus empirically knowable. For example, perhaps some theory postulates sub-atomic particles with various causal powers, and the 'auxiliary' theory is about how microscopes work, and it attributes powers to microscopes. The truth-makers of the two theories jointly make it the case that if a sub-atomic particle is in the right place at the right time, it will cause an observable macro-physical phenomenon.

This *making it the case* relation is the relation of metaphysical determination or causation, and it is not an epistemic, semantic or logical relation (Kripke 1980). There may *also* be relations of logical entailment between the two theories and some observable macro-claim. But that is only because the two theories quantify over the same causally efficacious objects/events/properties/relations/facts, and the logical entailment relation shadows the metaphysical or causal determination relations. In such cases, the logical entailment holds because of the recurrence of semantic items that refer to causally efficacious entities. But such logical entailments may also hold in virtue of the recurrence of semantic items that do *not* refer to causally efficacious entities. This is the case in the aura and mathematics examples of section 2. And it remains the most plausible diagnosis of Sturgeon and Brink's examples of moral arguments.

Let us now turn to empirical justification. Empirical justification is usually supposed to be justification by perceptual experience. But that does not help much until we know (a) what perceptual experiences are and (b) what the constraints are on the contents of perceptual experiences. A plausible constraint on facts that can figure in perceptual experiences is that they are the sorts of facts that have (positive) causal properties. Actual fact-belief causation is not in question for empirical justification, since there can be justified false beliefs. What is in question for justification is *possible* not *actual* causal role. If that is right, then the causal requirement for empirical knowledge also applies to empirical justification, and the explanation of epistemic status closure failure for knowledge carries over to justifiability. The explanation, in the case of justification, is this: given that it is not possible to perceptually represent entities or properties that necessarily lack a causal role with respect to our beliefs, it means that even if the contents of *two* such beliefs entail the contents of a belief that *is* perceptually representable or that *is* empirically justifiable, that does not transfer back to the two beliefs that entail it. It couldn't do, given the necessary causal inefficacy of what they represent. Hence epistemic status closure fails for justification as well as knowledge.

The point here is the dialectically negative one that from the fact that a conjunction of moral claims entails a claim that is empirically justifiable, it does not follow that the conjunction of moral claims is also empirically justifiable; and this is because epistemic status closure fails for justification as well as knowledge.

We need other reasons to embrace empiricism about moral judgements, reasons that have nothing to do with the appeal to coherence and the logical consequences of moral views.

Coda

The deployment of logic in philosophy is usually supposed to be justified by its role in clarifying issues. But in this case it does just the opposite. Matters of logic obscure questions of epistemic status. It is a mistake to think that one can characterise important epistemological issues about a range of judgements in terms of whether they have logical consequences that are observable. In particular, Sturgeon and Brink's Hitler and Zenobia examples of logical arguments from moral claims to observable conclusions do not favour the claim that moral beliefs are empirical. One could only think that they did if one relied on a faulty principle of epistemic status closure. The fact that two premises entail something observable gives us no reason whatsoever to think that the premises are known or justified empirically. Moral beliefs may be inter-dependent and they may hang together in a happy holistic web of moral beliefs. But such holism may also hold among mathematical and theological beliefs, even though they are not empirically known or justified. The fact that moral beliefs participate in a holistic web of belief is, by itself, no evidence at all that they are empirical. We need not deny that moral beliefs are held in the light of other moral beliefs, or that in moral reasoning we should reach 'reflective equilibrium' among our 'considered' moral beliefs. The issue is whether the members of the family of moral beliefs are tied to uncontroversially empirical beliefs *outside* that family so that there can be non-moral empirical evidence for moral beliefs. The mere fact that there are logical entailments flowing from moral beliefs to non-moral beliefs does not in the slightest favour the idea that there are evidential relations flowing from non-moral beliefs to moral beliefs. The reason for this is that epistemic status is not closed under logical consequence or derivation: the epistemic status of a theory does not depend on the epistemic status of theories that entail it or that it entails. This is the diagnosis of why both the appeal to holism and coherence, and the appeal to conjunctions of moral premises with empirical consequences, supply no encouragement to moral empiricism. We can make a firm distinction between ethics and science in the face of such entailments. They do not threaten the demarcation project.¹

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NOTE

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