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Quine on the Analytic/Synthetic Distinction

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A synthetic truth is one which is true both because of the way the world is, and because of what it means. An analytic truth, by contrast, is meant to be true in virtue of its meaning alone. The usual candidates for analytic truth include conceptual truths like *bachelors are unmarried* and *squares have four sides*, logical truths like *copper is copper* and *oxidized copper is oxidized*, and mathematical truths such as $5 + 7 = 12$ and $\{2\} \subseteq \{2, 3\}$.

Quine held that there were no analytic truths and moreover that it was unclear what analytic truth was, a thesis that is sometimes expressed by saying that there is *no such thing* as the analytic/synthetic distinction. His views on analyticity were a departure from a longstanding philosophical orthodoxy and they made space for a new, more radical kind of empiricism, according to which nothing can be known a priori, not even mathematics or logic. Nowadays, thanks largely to Quine, the thesis that there is no analytic/synthetic distinction is a mainstream view.[1]

There isn't just one Quinean argument against analyticity, however, but many. "Two Dogmas of Empiricism" (Quine 1951) is perhaps his most famous paper, but its arguments against analyticity are often regarded as puzzlingly unconvincing (Grice and Strawson 1956; Katz 1967; Boghossian 1996). It is sometimes said that the real force of Quine's attack on the analytic/synthetic distinction is to be found in "Truth by Convention" and "Carnap and Logical Truth" (Quine 1936b; 1954). In the pages that follow I will argue that there are ways to reconstruct the arguments from "Two Dogmas" that make them effective against at least some historically significant construals of analyticity,

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and that, taken together with the arguments from (Quine 1936b) and (Quine 1954), they set non-trivial limits on the kind of property analyticity can be.

1. Making Sense of "Two Dogmas of Empiricism"

"Two Dogmas" is one of the best-known articles in philosophy. Godfrey-Smith writes that it is "sometimes regarded as the most important [article] in all of twentieth-century philosophy" and Creath that it "is perhaps the most famous paper in twentieth-century philosophy" (Creath, 2004). The central thesis of the paper is that there is no analytic/synthetic distinction; the claim that there is one is the first of the alleged dogmas of the title, while Quine says that the second is "at root identical" to the first, so that really "Two Dogmas" has a single target: the analytic/synthetic distinction (Quine 1951, 38). There are two main arguments: the circularity argument, and the argument from confirmation holism.

The Circularity Argument

In the first part of the paper Quine examines a variety of historical attempts to define analyticity and rejects each as failing to live up to then contemporary standards of clarity, rigor, and metaphysical austerity. He also attempts his own chain of definitions, a chain which ultimately leads to disaster in purported circularity and his conclusion that there is no such thing as analyticity.

He proposes, to begin with, that we define analyticity in terms of synonymy:

> Definition 1 (Analytic) A claim is analytic if it may be transformed into a logical truth by substituting synonyms for synonyms.

But Quine then notes that such a definition presupposes that we have understood the expression *synonym* and wonders how we are to define that. He considers doing it in terms of definitions, of which he says there are three kinds – lexigraphical definitions, explications, and abbreviations – but says that the first two presuppose synonymy, rather than explaining it. Of the third he writes:

> Here we have a really transparent case of synonymy created by definition; would that all species of synonymy were as intelligible. (Quine 1951, 26)

Nonetheless, Quine proposes that we forget about definitions and instead try to explain synonymy in terms of necessity:

> Definition 2 (Synonym) Two expressions are synonymous if they may be substituted for each other in a sentence beginning "necessarily . . ." without change of truth-value.

This strategy, he says, has an "air of hocus pocus" because to suppose that we have made sense of 'necessarily' "is to suppose that we have already made satisfactory sense of 'analytic'." (Quine 1951, 29) We should thus give up on our attempts to define analyticity in terms of synonymy.

Carnap maintained that things like synonymy and analyticity are well defined only for artificial languages with precise "semantical rules" (Sober 2000), but Quine maintains that the expressions do not make sense in this domain either. For when we give rules for determining which of the sentences in our logical language deserves the label *analytic*, we may either be attempting to attribute an antecedently understood property – in which case Quine asks what that property is, and we find ourselves back where we started – or we are introducing a new property and legislating its extension. In the latter case Quine suggests that such a predicate "might better be written untendentiously as 'K' so as not to seem to throw light on the interesting word 'analytic'." (Quine 1951, 32) He concludes:

> . . . for all its a priori reasonableness, a boundary between analytic and synthetic statements simply has not been drawn. That there is such a distinction to be drawn at all is an unempirical dogma of empiricists, a metaphysical article of faith. (Quine 1951, 34)

The argument above raises some questions: Why does making sense of *necessarily* presuppose that we have made sense of *analytic*? Why does Quine's failure to define *analytic* show that it does not make sense? If Quine really doesn't understand *analytic* (instead of just feigning incomprehension), why aren't his analyses worse than they are and why does he consider himself competent to criticize the analyses of others? And if legislative definitions are transparent reports of synonymy, why isn't this sufficient to show that synonymy makes sense after all, with the result that we *can* define analyticity? I'll take these in turn.

Why does making sense of "necessarily" presuppose making sense of analytic*?* When dismissing attempts to explain synonymy in terms of necessity, Quine says that the analysis:

> is not flatly circular, but something like it. It has the form, figuratively speaking, of a closed curve in space. (Quine 1951, 29)

It is clear from the paper that he thinks such circularity is fatal, and also that it is linked to the fact that he thinks that to make sense of necessity is already to have made sense of analyticity. But the contemporary reader is likely to wonder why Quine thinks his reader will accept that – that necessity presupposes analyticity – without further argument.

Historical context will shed some light here. The empiricists of Quine's time were logical positivists and a central tenet of that philosophy was the Linguistic Doctrine of Necessary Truth. The idea is this: the positivists subscribe to verificationism about meaning according to which a sentence is meaningful only if there are data which could verify that it is true, or false. But the true sentences of logic and mathematics – things like *It is not the case that John is both tall and not tall* and 5 + 7 = 12 – don't fit with this verificationist picture very well. Such claims are usually thought to be necessarily true, so that no datum could disconfirm them, and their negations are thought to be impossible, so that no experience could verify them. From an empiricist standpoint, necessity can seem both metaphysically problematic – what is it, after all? – and epistemically problematic – how can data about the way things are tell us anything about how they have to be? The Linguistic Doctrine of Necessary Truth is the positivist's answer to these problems. It says that the true claims of arithmetic and logic are analytic, where that is to say that they are true in virtue of their meanings alone. This is thought to explain both their necessity and our knowledge of it; if a sentence is true in virtue of its meaning, then it doesn't matter what the world is like, the sentence will still be true – hence it is necessary. And if it is true in virtue of what it means, and (as we'll assume for argument's sake) speakers are acquainted with the meanings of the expressions they use, then they are likely to be able to work out that the sentence has got to be true without experiencing the world. Hence the widespread belief amongst empiricists of the time: what it is to say that a truth is necessary is to say that it is analytic.

And once we recall this, it becomes clear why Quine thinks an analysis of analyticity that presupposes an analysis of necessity is inadequate: Quine is assuming that the reason we are interested in analyticity is because of its ability to explain necessity. Since this account is not suitable for that, he rejects it.

Why would the failure to define 'analytic' show that it does not make sense? A second puzzle was why the failure to find a definition of analyticity was taken to cast doubt on its existence. Augustine discovered upon reflection that he was unable to define time:

> For what is time? Who can easily and briefly explain it?. . . . If no one ask of me, I know; if I wish to explain to him who asks, I know not. (Augustine 1991 [397–401])

But Augustine did not conclude from that there was no such thing. Why is Quine justified in drawing a stronger conclusion in the case of analyticity?

There are a variety of published answers (Grice and Strawson 1956; Harman 1999b; Boghossian 1996; Harman 1999a). One idea is that *analytic*, unlike *time*, is a technical, philosophical expression, rather than one that is entrenched in ordinary language. One might think that when a word has been in use for an extended period there is a default presumption that it is meaningful, so that substantial work is needed to show that it isn't. With newer or more technical expressions, however, history and established practice have less weight, and so less is needed to justify the view that the expression is meaningless.

This has a certain plausibility. Certainly if *analytic* were brand new – if the author of a new paper had just invented it – you would expect them to define it, and if they did not, there would be reason to suspect that the predicate had no meaning at all, since there had been nothing to give it any. Moreover, if the author offered a definition, but we then discovered a flaw in the definition that made it incoherent or ineffective, then too, we would have grounds to think the expression problematic.

Older expressions from natural languages, like *time*, really are different. Native speakers usually learn them through exposure to many instances of use, rather than through an explicit definition. It isn't surprising, then, if their knowledge of the meaning is largely tacit and difficult to make explicit. With these kinds of expression it is unsurprising that one speaker finds it hard to come up with a definition, and so this provides no evidence that that the expression is meaningless.

Nonetheless, *analytic* is hardly brand new. It has been in use in philosophy for centuries. Perhaps this history of usage – while not giving it the respectability of *time* – should count for something. Grice and Strawson (1956) suggest a different response. They point out that even if *analytic* is a somewhat philosophical expression, Quine has already conceded that it can be defined in terms of *synonymy* or equivalently, using the words *means the same as*, and they argue that these words are a part of ordinary language – this is not a new technical expression at all. Given that *means the same as* is meaningful, and *analytic* can be defined in terms of it (and other uncontroversially meaningful expressions), analytic must be meaningful as well.

One response available to a Quinean is to argue that it is a mistake to think that the sense of *means the same* which is adequate for defining analyticity is the same as the one that we find in ordinary language:

> When philosophers say that analytic truths are those truths that are synonymous with or mean the same as truths of logic, they use 'synonymous' and 'mean the same' as technical expressions. They do not use these expressions in their ordinary sense. One has only to examine a dictionary of synonyms in order to appreciate this point with respect to 'synonym.' (Harman 1999b, 124–125)

Certainly philosophers attempt to be more careful with their uses of *means the same* than ordinary speakers have any need to be. And while it is not obvious that this means that they are using the expression with a different, technical meaning – perhaps doctors use the expression *arthritis* with more care than ordinary speakers (Burge 1991 [1979]), but it isn't clear that they are using different senses of the word – ultimately even well-entrenched expressions could turn out to be meaningless and neologisms perfectly meaningful.[2] Perhaps, for the sake of argument, we should concede that analytic is a newish technical expression and just come right out and ask: how is the case against it supposed to work?

Kinds of Meaning

It will be helpful at this point to distinguish three different senses of meaning. Only one of these is explicitly acknowledged by Quine in the paper, but all three, I think, play a role in the best explicit reconstruction of the circularity argument.

So first, sometimes we say that an expression is meaningful if it has significance for people, where this is usually a consequence of our having a practice of using it to do certain things. In this sense even the greeting "hello" has meaning, even though there is no object in the word that it is supposed to "mean." In this minimal sense it is clear that *analytic* does have meaning, and had meaning when Quine was writing, since it was in use. We might call this easily obtained kind of meaning "meaning-lite." Even Quine, then, can agree that *analytic* has meaning-lite.

But meaning-lite isn't always what we have in mind when we talk about meaning. Often we have in mind the thing, or set of things, that the expression picks out: its referent or extension (in this context no harm will come from using these words interchangeably). This second level of meaning is one that Quine explicitly acknowledges in "Two Dogmas" (though in "Two Dogmas" he prefers to reserve the word *meaning* for intensional notions).

Quine thinks that *analytic* does not have meaning in this second sense. It isn't just that there turned out to be no analytic truths, so that *analytic* takes the empty set as its extension, rather he thinks that no good mechanism has been established which would link the expression to a suitable extension. *Analytic* on

Quine's view has no extension because its meaning – in a third sense – is unclear.

And so a third thing that gets called meaning is the mechanism or rule that establishes the extension of a word. Strings of letters are not born with extensions, they have to be specified somehow. To be clear, I am not assuming that this rule is always known, far less known explicitly, to competent speakers. I take what I'm saying to be compatible with semantic externalism. But extension-determination is not magic, and if an expression has an extension, that extension was determined somehow, whether that be through explicit definition, descriptive content, causal chain, or something else.

Does Quine think that *analytic* is meaningful in this third sense? I think he would say that its meaning in this sense is defective: the rule for determining its extension is faulty and so it fails to determine an extension.

An example will illustrate what I mean. Suppose I introduce a new technical term – strice – in a paper and define it thus: "a strice is a number that divides a grison with no remainder." Then I have apparently provided a rule to determine what does and does not fall in the extension of *strice*; I've apparently given *strice* a meaning in the third sense of the word. But when we look closer we encounter a problem, for the rule exploits another technical term – *grison* – and as a result *strice* can have a well-defined extension only if *grison* does. Happily, I provide a rule/definition for this expression too: a grison is a number that can be divided by a strice with no remainder.

But this will not do. The extension-determining rule for *strice* depends upon that of *grison* and vice versa, and now it seems clear that successful extension-determining must meet a certain constraint: it cannot be circular; circular extension determination is ungrounded – it fails to latch onto the world in the expected way.

So now I'd like to suggest a specific interpretation of the thesis of the circularity argument. There are three parts to it:

1. Analytic may well have meaning-lite, but
2. the rule for determining the extension of analytic is defective in a fatal way – it is circular – and as a result,
3. analytic does not have an extension.

My argument that this is Quine's view – despite the fact that he doesn't set it out so explicitly – is that attributing this view to him allows us to solve some puzzles about the circularity argument, as well as clarify why the argument has some force.

If Quine doesn't understand analytic*, why isn't his analysis of it worse?* Quine claims not to understand *analytic* or *synonymous* but if what he says is true, it

is hard to see why his attempts at analyzing the expressions aren't worse; it never occurs to Quine that something might be analytic if and only if it is an elephant, for example. This much accuracy can perhaps be explained by his acquaintance with the meaning-lite of *analytic*; Quine is a philosopher, he knows how the expression was used historically by Kant, Frege, Carnap, etc, and this is enough to make it clear that analyticity is supposed to be a property of truths, and not elephants. (Perhaps some sociopaths do not really understand the word *nostalgia* but even they know that it is supposed to be a feeling, and not a type of rock.)

But Quine's confident analyses of the meaning of *analytic* and criticisms of the analyses of others go beyond what we would expect him to have just from being immersed in the philosophical world:

> There are those who find it soothing to say that the analytic statements of the second class reduce to those of the first class, the logical truths, by definition; 'bachelor' is defined as 'unmarried man'. But how do we find that 'bachelor' is defined as 'unmarried man'? Who defined it thus and when? Are we to appeal to the nearest dictionary . . .? Clearly this would be to put the cart before the horse. (Quine 1951, 24)

> A natural suggestion, deserving close examination, is that the synonymy of two linguistic forms consists simply in their interchangeability in all contexts without change of truth-value . . . But it is not quite true that the synonyms 'bachelor' and 'unmarried man' are interchangeable salva veritate. (Quine 1951, 27)

Quine says that *analytic*, *synonymous*, and *meaning* are meaningless, but he writes like someone who understands them perfectly well and is gradually working his way toward an explicit account of what it is to be analytic, synonymous, meaningful, etc. A natural explanation of what is going on here is that he (implicitly) takes himself to be acquainted with the rules that are meant to determine the extensions of these expressions, so that he "knows what they mean" in the third sense of "mean." He works toward making those explicit much as any philosopher might, and his crucial insight is that doing so reveals that the rules are defective: the circularity that he discovers means that expressions like *analytic*, *meaning*, etc., are ungrounded and have no extension (no meaning in sense 2). Hence this interpretation makes sense of Quine's claim that *analytic* is not meaningful, as well as the claim that its meaning is defective, and the manifest fact that in some sense Quine knows perfectly well what the expressions mean.

This interpretation also, finally, offers a solution to our puzzle from two sections ago. Why does Quine's failure to define *analytic* show that it cannot be defined, even though Augustine's failure to define *time* did not show that it

cannot be defined? Answer: because Quine does not simply take himself to be casting about for any possible definition of analytic. He thinks he has the right one – the right rule for determining whether or not a sentence is analytic – it is just that he also thinks he has shown that that rule is circular and hence defective.

If abbreviating definitions are transparent cases of synonymy, why can't synonymy be used to analyze analyticity? A final puzzle concerning "Two Dogmas" is what we are to make of Quine's admission that synonymy – in the case of abbreviating definitions – really does make sense after all. The problem is that Quine seems to accept all of:

- if there is such a thing as synonymy, then there is a satisfactory analysis of analyticity in terms of it;
- abbreviating definitions are transparent cases of synonymy (so there is such a thing);
- there is no satisfactory analysis of analyticity.

The inconsistency is so blatant that critics often either choose to ignore it completely, as Grice and Strawson do:

> Now if we are to take these words of Quine seriously, then his position as a whole is incoherent . . . perhaps we should not take Quine's words here too seriously. (Grice and Strawson 1956: 153)

or else they struggle to come up with a coherent interpretation and end up with something that seems too difficult to defend to have been something that Quine could reasonably have thought he could maintain without argument in "Two Dogmas":

> So his skepticism about synonymy has to boil down to the following somewhat peculiar claim: Although there is such a thing as the property of synonymy; and although it can be instantiated by pairs of tokens of the same orthographic type; and although it can be instantiated by pairs of tokens of distinct orthographic types, provided that they are related to each other by way of an explicit stipulation; it is, nevertheless, in principle impossible to generate instances of this property in some other way, via some other mechanism. . . . (Boghossian 1996)

A further possibility – one which has support both from Quine's explicit views on definition elsewhere (Quine 1954) and Harman's sympathetic presentation of Quine's views on meaning and analyticity in (Harman 1999a; 1999b) – is that the type of analyticity that one would get from the synonymy

provided by abbreviating definitions is not a type of analyticity that will do the work empiricists have set out for it. Even before he wrote "Two Dogmas," Quine stressed that definitions were used for convenience, they were something that allowed a theory – especially a theory in logic or mathematics – to be written more concisely and which could be dropped or altered anytime without loss to the theory (Quine 1936a, 47). At this point he seems to have thought this was obvious, but in later work Quine came to emphasize the so-called *transience* of definition:

> The distinction between the legislative and the discursive refers thus to the act, and not to its enduring consequence, in the case of postulation as in the case of definition . . . Conventionality is a passing trait, significant at the moving front of science but useless in classifying the sentences behind the lines. It is a trait of events not sentences. (Quine 1954, 112)

Being a definition, and hence a source of synonymy and analyticity, is not, says Quine, an enduring trait of truths, but rather a transient fact, a feature of the history of a sentence. There is much more to be said about Quine's views on the transience of definition[3] but one way to make sense of the views he expresses in "Two Dogmas" is with the thought that *since* abbreviating definitions are transient, and the logical positivists require a kind of analyticity that is not, the kind of analyticity that would be generated by abbreviating definitions will not suit their purposes.

The Argument from Confirmation Holism

We can reconstruct a different argument against the analytic/synthetic distinction from the final sections of "Two Dogmas." Quine assumes a prima facie plausible epistemic position sometimes called *confirmation holism*. He observes that when we are confronted with evidence that conflicts with a particular hypothesis, it is often possible to maintain that hypothesis if we are prepared to adjust our commitments in other places. One might ignore a questionable experimental result, for example, if one is prepared to adjust one's beliefs about the reliability of the equipment used in the experiment. Generalizing, Quine suggests that sentences are never confirmed or disconfirmed in isolation; rather it is entire theories of the world, or "webs of belief," that receive confirmation or disconfirmation when we examine data.

P1 Confirmation holism: it is only entire theories, not individual sentences, which are confirmed or disconfirmed by data.

The second premise is another tenet of logical positivism, namely, the verification theory of meaning, according to which the meaning of a linguistic item is an ordered pair of sets of data, namely, the set of data that would confirm it, and the set that would disconfirm it.

P2 Verificationism about meaning: the meaning of a linguistic item is the set of data that would confirm it paired with the set of data that would disconfirm it.

From just these two premises it is already clear that Quine is suggesting that confirmation holism ought to lead the positivists to a radical new conception of meaning. Strictly speaking, they ought to think that single sentences in isolation do not *have* a meaning, since they are not susceptible to confirmation or disconfirmation. Rather it is entire theories which have meaning:

C1 Isolated sentences do not have meanings. Only entire theories have meanings.

Quine does draw this conclusion explicitly, but his focus in the "Two Dogmas" paper is on the analytic/synthetic distinction, and so he also draws out some of the consequences of the verificationism/confirmation holism fusion for analyticity. Given verificationism about meaning, he thinks it is natural for us to define an analytic sentence in a slightly unfamiliar way, as one which is confirmed come what may:

P3 An analytic sentence is one which is confirmed come what may.[4]

But on the new picture sentences are not the kind of thing that can be confirmed, never mind confirmed come what may, and so Quine can say:

C2 There are no analytic sentences.

Worse than this, the whole idea of a sentence that would be confirmed come what may seems to have been confused:

> . . . it becomes folly to seek a boundary between synthetic statements, which hold contingently on experience, and analytic statements which hold come what may. Any statement can be held true come what may, if we make drastic enough adjustments elsewhere in the system. Even a statement very close to the periphery can be held true in the face of recalcitrant experience by pleading hallucination

> or by amending certain statements of the kind called logical laws. Conversely, by the same token, no statement is immune to revision. Revision even of the logical law of the excluded middle has been proposed as a means of simplifying quantum mechanics; . . . (Quine 1951)

A Second Picture

There are some obvious ways to challenge this deductive argument against the analytic/synthetic distinction. Philosophers of science have disputed the first premise (Sober 2000), verificationism is anathema to most philosophers of language, and the definition of analyticity will seem sloppy to contemporary readers since it fails to distinguish analyticity from necessity or apriority. Ultimately, I am inclined to think all three of the premises in the argument from confirmation holism are false.

But to leave things there would be to miss something important about the epistemic force of the last part of "Two Dogmas"; sometimes a philosophical picture of how things work gains currency – whether or not there are good arguments in its favor – because it is hard for anyone to imagine that things could be any other way. If that picture also seems to provide needed solutions to central philosophical problems – such as how we know mathematical truths, or the nature of necessity – then it can be very hard to dislodge; even deductively valid arguments against the view may be demoted to the status of "problems" rather than refutations. But one of the ways such a resilient picture can be undermined is through the elaboration of a reasonable alternative. Mere awareness of the alternative has a tendency to rob the dominant picture of its sense of inevitability, and philosophers who might earlier have shrugged their shoulders and accepted it will now shrug their shoulders and withhold judgment.

Logical positivism was not the only view around when Quine was writing, but for a philosopher of a certain bent, for whom rationalism and Kantianism were things to be escaped, it might well have been the only attractive one. And so the last part of "Two Dogmas" does more than merely present an additional argument against the analytic/synthetic distinction; it presents a new picture of how the world, but more especially epistemology in the world, can work, and offers an alternative account of the status of logical and mathematical truths.

Whenever we encounter what Quine calls a "recalcitrant" experience, one which does not fit with our overall theory of the world, there will be – consistently with confirmation holism – several different ways to adjust that web so that it no longer conflicts with the new datum. But some of these ways will strike us as better than others; we would be concerned for the sanity of a scientist who responded to the first piece of unwelcome evidence by

concluding that the information stream from his eyes to his brain was being manipulated by aliens, or that the sum of 2 and 2 was no longer 4, even if those moves would bring his overall theory of the world back into harmony with the data. Quine suggests that the reason for this is that we are inclined to favor changes which comply with principles of conservativeness and simplicity (and it seems clear that he could allow more such principles) (Quine 1951, 43). A theory which included a sudden belief in aliens with an interest in controlling our visual streams would not be very conservative compared to one which revised the original only by giving up the hypothesis being tested, or giving up a belief in the infallibility of the scientist's equipment (or research team). Similarly, giving up the belief that 2 + 2 = 4 would presumably complicate our theory a great deal. It would require changes to our theory of subtraction, changes to the way we compute the bill in restaurants, changes to our beliefs about the appropriate way to work out how many offspring, or limbs, certain animals have. So here is the proffered explanation of the status of mathematical and logical truths: it is extremely unlikely that we will relinquish them, given our commitments to simplicity and conservatism in belief change. We have had a tendency to exaggerate this status to being such that they will be confirmed come what may. But really they are just much less likely to be given up than statements at the periphery of the web, such as *there are brick houses on Elm Street*.

A Third Picture

The most powerful part of the end of "Two Dogmas" is the presentation of an alternative worldview. So rather than argue against specific premises in the deductive argument I reconstructed, let me finish this section by outlining a third worldview that differs both from that of the positivists and also from that of Quine.

One thing that both the positivists and Quine's views have in common is the assumption that the epistemological, semantic, and metaphysical distinctions all track together (Kripke 1980; Burgess 1997; Soames 2003). For the positivists there are two kinds of truth, the apriori/analytic/necessary ones and the aposterori/synthetic/contingent ones, but for Quine there is only the latter. Let's drop the assumption. Confirmation holism is a view in epistemology. A central strand in that view is that it is entire theories – since I'm less worried about abstracta than Quine was I'm tempted to say entire models, or pictures of how things are – that are confirmed or disconfirmed by observation. Quine's radical suggestion was that that was how things worked in mathematics and logic as well. And, on reflection, I now think that that is quite plausible when it comes to logic.

Consider, for example, a typical story about how someone comes to be justified in believing the law of excluded middle, that is, in believing that for all values of φ, $\varphi \vee \neg \varphi$ is true. It's almost always presented to us explicitly for the first time in an introductory logic class. There it is presented as part of a powerful theory – classical truth-functional logic. Prior to acquaintance with this theory, most people's explicit theorizing with regard to logic is limited to slogans from detective stories like "you can't prove a negative" and some fuzzy ideas about it being bad to generalize. There is simply no contest between such inchoate thoughts and the new theory: classical logic explains the special status of things like $\varphi \vee \neg \varphi$, $\varphi \rightarrow \varphi$, $\neg(\varphi \wedge \neg \varphi)$, and also other logical properties, such as consequence, equivalence, and inconsistency. It offers methods for detecting the presence of these properties in less intuitive cases, such as Pierce's law or *modus tollens*. Familiarity with it makes it easier to follow proofs in other classes (contraposition in proofs in physics, when it is appropriate to use reductio in informal proofs in arithmetic). It can be extended with quantifiers to make it even stronger. Classical logic is a beacon of theoretical virtue: it unifies different phenomena, explains new cases, is simple, useful, and general. It's no wonder that students to whom it is first presented, who know of no other alternative beyond some pre-theoretic floundering, accept it and with it the law of excluded middle. If you ask them why they accept the law, they are likely to provide a real argument: Look, whatever φ is, it can only be true, or false, right? If it's true, then $\varphi \vee \neg \varphi$ is true, given the truth-clause (the "semantics") for disjunction. If false, then $\neg \varphi$ is true given the truth-clause for negation, and again $\varphi \vee \neg \varphi$ is true. We may even think that the justification for the belief is based on facts about the meanings of the connectives, that it is *derived* from them.

Consider, however, how such a belief might come to be revised. A professor (Professor 2) in another class challenges the assumption that P is either true or false. Armed with the paradoxes of vagueness, she argues that sentences may lack a truth value. But crucially, she doesn't stop there. She provides a new theory, one in which sentences may have one of three values, *true*, *false*, or *neither*, she specifies some designated values, and then demonstrates how to use truth-tables to determine whether the logical properties of validity, consequence, equivalence, and inconsistency apply.

Our subject mulls this over for a while and eventually comes to believe a new view: the logic that he learned in intro class is unable to deal with the recalcitrant cases from vagueness. The three-valued logic has many of the benefits of the old logic – it explains why certain sentences are special, why certain arguments are good, etc. – and it continues to do so in a general, unifying, useful way and, unlike the old logic, it can handle the case where φ has no truth value. The new picture is better, he decides, and he switches to it, and in the process gives up his belief in the law of excluded middle. Working

in this new, weaker logic turns out to be difficult sometimes; he occasionally yearns for the days when he could employ the law of excluded middle, or double negation elimination, in his proofs, but, he recalls, there are good reasons not to use them; sometimes there are weapons that the good guys aren't allowed to touch.

And now finally consider how he might come to revise his beliefs once again. Another professor (Professor 3) tells him about various paradoxes, such as the Liar, argues that their conclusions are both true and false. She too offers a three-valued logic, with many of the familiar virtues, but this time the third value is *both*. She points out to our subject that he was convinced by similar arguments to give up the assumption that sentences had to have a truth value. So, now, Professor 3 maintains that, for consistency's sake, our subject should give up the assumption that sentences cannot have more than one.

Our subject agrees with Professor 3 that the case for adopting a paraconsistent logic is about as good as the case for adopting an intuitionist one, but the experience of working with a weakish logic has sensitized him to the difficulties this involves. He knows that if he accepts the new argument he will lose even more useful tools. The parallels between the problem with vagueness and the problem with contradictions lead him to think that he might have started down a slippery slope when he gave up classical logic. Maybe he gave in too easily? Perhaps the natural domain of logic is sentences which have a truth value. Or perhaps he needs a new view of vagueness. Here's one way to respond to the two similar worries in similar ways: instead of moving on to a logic that is both intuitionist and paraconsistent, he'll go back to classical logic. And that's what he does, reacquiring his belief that the law of excluded middle is a logical truth in the process.

I am less interested in the details of this case – it doesn't matter, for example, that the subject ends up believing classical logic rather than some other logic, or whether we could or should have talked him out of any of these moves – than I am in some very general features of this story about change in belief in logic. The justification for the belief in this principle of logic is holistic in that it depends on the status of the claim in an entire theory. How reasonable it is to accept that theory depends on theoretical properties like explanatory power, strength, unification, usefulness, and simplicity. Logical beliefs can reasonably be given up, as well as reasonably acquired (Harman 1986).

In many ways this fits rather well with the epistemological approach at the end of "Two Dogmas." It is an example of epistemic holism and while aposteriori justification and holistic justification are not the same thing, at least some parts of the process do appear to be aposteriori as well as holist, for example, the fact that classical logic can be useful in physics. But unless we are assuming that metaphysical and semantic features must track the

epistemological ones, it does not provide any reason to think that the correct logic – whichever one that is – is contingent or synthetic. Logical facts may indeed be determined by semantic ones, but some semantic facts – including things like whether sentences need have exactly one of two truth values – may themselves be difficult to determine, and require the weighing up of theories on the matter. For those of us who are not verificationists, then, holism in the epistemology of logic is compatible with logic being necessary *and* true in virtue of meaning.

2. Arguments Against Truth in Virtue of Meaning

Though "Two Dogmas" is Quine's most famous paper, many think that his most compelling arguments against analyticity appear elsewhere. They are aimed at the idea of truth in virtue of meaning alone, and their loci classici are the papers "Truth by Convention" (Quine 1936b) and "Carnap and Logical Truth" (Quine 1954).

Definitions Don't Ground Truth

In (Quine 1936b) Quine notes that people often try to defend the idea that sentences may be true by virtue of meaning by talking about definitions. Definitions are said to be transparent cases of truth in virtue of meaning. After all, we only introduced the word being defined through the defining sentence; it is hard to see how now, given what the word means, the definition could be false – so meaning seems to guarantee truth. Moreover, definitions have an entrenched role in both mathematics and the empirical sciences; it is hard to see how even the most vehement opponent of analyticity could want to reject them.

Quine denies that defining sentences are true in virtue of meaning alone. We might consider a specific definition such as "bachelors are unmarried men" and claim that because "bachelors" means the same as "unmarried men" the sentence expresses the very same meaning as "unmarried men are unmarried men." Of course, that latter sentence expresses a truth, so in virtue of *bachelors* meaning the same as *unmarried men*, "bachelors are unmarried men" is true. And so we feel tempted to call it *true in virtue of meaning*. But Quine points out that the grounds of the truth of the definition must be not just the meaning of *bachelors*, but that plus whatever made the sentence *unmarried men are unmarried men* true – and what is that?

The same point is perhaps clearer where the second sentence is not a truth of logic, but one of physics. If we introduce the expressions F, m, and a

separately and later discover, though experiments, that F = ma is true, no one will be tempted to say that it is true in virtue of meaning. Should we then introduce a synonym for F, G, then it is clear that in virtue of the meaning of G, G = ma is true too. But only because F = ma was true already and G = ma says the same thing. In this case it is quite clear that G = ma is not true in virtue of meaning alone, but true in virtue of meaning plus whatever made F = ma true – in this case, facts about the physics of the world. Quine's point is that definitions do not create truth, they merely give us new ways to write truths down.

Logical truths So when we consider in virtue of what *bachelors are unmarried men* is true, we must first answer the question of what makes *unmarried men are unmarried men* true. Quine is not tempted by the idea that truths of logic are themselves true in virtue of meaning:

> Consider, however, the logical truth, 'Everything is self-identical', or, '(x)(x = x)'. We can say that it depends for its truth on traits of the language (specifically on the usage of '='), and not on traits of its subject matter; but we can also say, alternatively, that it depends on an obvious trait, viz., self-identity, viz., of everything. (Quine 1954, 113)

It is, after all, a fact about the world that everything is self-identical, isn't it? And it is a fact about the world that whenever snow is white and, in addition to that, grass is green, the conjunctive fact that snow is white and grass is green holds as well. So why not just say that logical truths, like ordinary synthetic ones, are true both in virtue of the way the world is, and in virtue of what they mean?[5]

Conventionalism and the Sentence/Proposition Distinction

Quine's efforts to undermine the idea that sentences that had typically been taken to be analytic – logical truths, mathematical truths, definitions, etc. – really were so were aided by the fact that the positivists had tended to overshoot in two different ways when describing analyticity. Many positivists were distrustful of metaphysics and, as a side effect, uncomfortable taking about abstract objects. As Carnap put it:

> Empiricists are in general rather suspicious with respect to any kind of abstract entities like properties, classes, relations, numbers, propositions, etc. . . . As far as possible they try to avoid any reference to abstract entities and to restrict themselves to what is sometimes called a nominalistic language, i.e., one not containing such references. However, within certain scientific contexts it seems hardly

> possible to avoid them. . . . probably he will just speak about all these things like anybody else but with an uneasy conscience, like a man who in his everyday life does with qualms many things which are not in accord with the high moral principles he professes on Sundays. (Carnap 1958, 205)

Perhaps as a side effect of this distrust of propositions, it wasn't common to distinguish sentences from propositions (to distinguish one thing from another you usually need to talk about both) and discussion was restricted to sentences or statements (interpreted sentences). For the same reasons, empiricists could also be hesitant to talk about meanings in general and were quick to identify them with apparently more concrete things, such as the linguistic conventions governing the uses of words. Hence the expression "truth by convention" was often treated as interchangeable with "truth in virtue of meaning." It was fairly easy, then, to slide between two theses: the thesis that a sentence could be true in virtue of meaning, and the thesis that what the sentence said – the propositions it expressed, or its content – could be true by convention.[6]

But while the thesis that a sentence can be true in virtue of meaning is of great interest, the thesis that a non-metalinguistic proposition may be true by convention is implausibly strong (Quine 1954; Yablo 1992; Boghossian 1996; Sober 2000). For consider the propositions expressed by some putative analytic truths, such as "all bachelors are unmarried" or "copper is copper." Is it really plausible that the proposition that all bachelors are married is made true by the conventions governing the English word "bachelor"? What, as Sober asks, about the French bachelors?

> 'Quelle impertinence!' one can hear them exclaim. The fact that bachelors are unmarried is no more dependent on English than it is on French. (Sober 2000, 247)

Similarly, regarding a logical truth, Boghossian points out that a sentence will only be true if it expresses some proposition p, and that proposition is true, and then:

> Are we really to suppose that, prior to our stipulating a meaning for the sentence *Either snow is white or it isn't* it wasn't the case that either snow was white or it wasn't? Isn't it overwhelmingly obvious that this claim was true before such an act of meaning, and that it would have been true even if no one had thought about it, or chosen it to be expressed by one of our sentences? (Boghossian 1996)

The argument against truth in virtue of meaning can be set up as a dilemma. Take your favorite putative example of something that is true in virtue of meaning, say *Copper is copper*. That might be true only in part because of what

it means, and in part because of the way the world is. But if that is the case, it is no different from a synthetic truth. The alternative is that you might want to say that the truth has its truth value determined entirely by its meaning, not just in part. But if you go this way you are open to the kind of objections leveled by Quine, Sober, and Boghossian above: why don't we say that *Copper is copper* is true in part because it is a fact about the world that copper is copper? Moreover, a sentence can only be true if the proposition it expresses is true, and it just seems wrong to say that the proposition that copper is true is dependent on the meanings of any English sentences; surely that would be true even if we had no word for copper.

If there are any non-metalinguistic propositions which are made true by meanings or conventions, the arguments above suggest that our favorite examples of analytic truths are not among them. So one of the things that those arguments can be taken to show is that the best account of truth in virtue of meaning ought to avoid committing us to such views, and instead take the objects of truth in virtue of meaning to be sentences.

It might seem, however, as if the arguments above also show that any account of truth in virtue of meaning for sentences must immediately impale itself on the first horn of the dilemma instead: one might think that sentences are always true only in part because they mean what they do (express a certain proposition) and in part because certain facts about the world are the case (and so make that proposition true). Unless we are prepared to maintain that the sentence's meaning is somehow capable of changing the facts to suit it (which we are not), we seem to be forced to say that the meaning of the sentence is only partly responsible for the truth of the sentence. And that would make such sentences no different from synthetic ones.

Well, sort of. But sort of not. To begin by approaching the matter in quite an abstract way, consider the binary multiplication function on the natural numbers. When we multiply two numbers together to get their product, we can always answer the question "why did we get the value we did?" by pointing to the values of the first and second arguments. The value of 5×3, for example, is 15 in part because the first argument was 5 and in part because the second was 3. The first argument couldn't determine the value all on its own. However, multiplying 0 by another natural number is obviously a special case. Suppose we take 0×5. Then it is still true (in some sense of "determines") to say that the function determines the value 0 in part because the first argument was 0 and in part because the second was 5, but it is also quite clear that in another important sense (of "determines") 0 determined the value of the function all on its own.[7] And it didn't do it by requiring that the second argument have a certain value. Rather, although some second argument or other was needed, it didn't matter which number that was. Similarly,

a sentence may be true in virtue of meaning – in the sense required for analyticity – if its meaning is sufficient to determine the value *true* regardless of the worldly facts.

Here's a less abstract way to approach the same idea. The kinds of sentences Kaplan calls *contingent analytic* in "Demonstratives" (Kaplan 1989) are such that they say different things on different occasions of use (they express different propositions relative to different contexts of use, that is, when said by different speakers, or in different places, or at different times, etc.):

(1) I am here.
(2) dthat[the shortest spy]=the shortest spy
(3) Tomorrow is two days after yesterday.

What makes them analytic is that in whatever context they are used they express a proposition true relative to *that* context of use. The result is a sentence whose meaning is sufficient to guarantee its truth – even though it does not determine the truth of the proposition it expresses. With *I am here*, for example, the sentence had to be true, but the proposition that it expresses did not (I *could* have been elsewhere) – and of course, the meanings of the English words did not somehow bully me into sitting in this café.

Similarly, if we are considering whether these sentences are true in virtue of meaning:

(4) All bachelors are unmarried.
(5) Snow is white or it is not the case that snow is white.
(6) $2 + 2 = 4$

then what we ought to be considering is not whether the meanings of some sentences are capable of preventing weddings, coloring snow, or manipulating eternal abstracta, but rather whether these are sentences whose meaning will guarantee that they express a true proposition regardless of whether anyone gets married, snow changes color, or the exciting goings on in the third realm.

3. Conclusion

In this paper I have focused on three main Quinean attacks on the analytic/synthetic distinction: the circularity argument, the argument from confirmation holism, and a set of related arguments against truth in virtue of meaning. I've argued that we can make better sense of the circularity argument than is

sometimes supposed but that doing this requires us to formulate Quine's point in terms of different kinds of meaning.[8] I've also argued that something like Quine's confirmation holism picture is actually rather plausible in logic. But I have suggested that since we no longer think that meaning is internal or that necessity entails apriority, there's no real argument from this to the claim that logic is neither analytic nor necessary.[9] Finally, though many find Quine's arguments concerning truth in virtue of meaning compelling, I've argued that they shouldn't. Rather the main lesson we should take from them is that it is sentences, not propositions, which are true in virtue of meaning, and I've used examples from Kaplan (1989) to argue that this special status is compatible with their being unable to affect the truth values of the propositions they express.

Notes

1 The 2009 Philpapers survey of philosophers' views reported 65% of respondents as "leaning towards or accepting" the existence of the analytic/synthetic distinction, and 27% as leaning towards or accepting its non-existence. 8% were recorded as "other."

2 I take it that STR showed that 'simultaneous' (in the absolute sense) was empty and Russell's paradox showed that the naive '$\in$' was meaningless.

3 See for example Russell (2008, 143–162) for more.

4 It might be tempting here to point out that Quine appears to have found an acceptable definition of analyticity. We could offer the following dilemma: either this definition is good, and analyticity makes sense, or it isn't any good, and the argument from confirmation holism is unsound. But again I think the right interpretation here is to think of Quine as suggesting that this is an accurate definition in that it gives the actual rule for determining the extension of analytic, but observing that this rule is problematic, since there are no sentences which get confirmed at all, never mind come what may.

5 (Quine 1936b) also contains the important Regress Argument against the view that the primitive logical constants get their meanings through implicit definition.

6 Talk of propositional truth by convention was encouraged by the intellectual atmosphere in the physics community at the time, where Einstein's working hypothesis that the speed of light was uniform was often described as "true by convention" (Sober 2000).

7 And also quite clear that the "determines" vocabulary is unhelpfully vague for our purposes. See Russell (2008) for a proposal about how to clean it up.

8 One of which, as it happens, I think can be used to define analyticity, but that longer story can be found in Russell (2008).

9 Russell (2012) complicates this picture somewhat.

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