

SEMANTIC REGULARITY AND THE LIAR PARADOX

1. Introduction. There are two main tasks in which writers on the Liar paradox might see themselves as engaged. The first task is saying what is going on in a natural language such as English when we say things such as ‘This sentence is not true’. The second task is constructing consistent formal systems which have as much expressive power as possible, or which can express certain notions in which the writer is particularly interested. Many authors attempt both tasks at once: they present a consistent formal system, and argue that it provides a model of natural languages such as English. My task here is the first one. I do present a consistent formal system and claim that it provides a perfect model of natural languages such as English, but this system involves no surprises. It is none other than the standard framework of classical logic and model theory. The real weight of the argument lies in the claim that the classical framework—without alteration or addition—has the resources to model what happens when we say in English ‘This sentence is not true’.

Apart from the fact that it is one hundred percent pure classical, the solution to the Liar to be presented here has two notable features. (i) It does not generate a strengthened Liar paradox or revenge problem. (ii) The entrenched belief which the solution asks us to relinquish¹ (a) is a belief whose proper home is philosophy of language, not logic; (b) is a quite general belief about the operation of language, rather than a particular belief about a certain class of words (e.g., ‘is true’ and cognates); and (c) is also the key to solving a host of other deep philosophical problems such as Quine’s problem of the indeterminacy of meaning, Kripkenstein’s sceptical puzzle, Putnam’s paradox, the problem of empty names, and the problem of false precision.

2. The classical framework. I have said that my solution stays entirely within the bounds of classical logic and model theory. To begin, I need to present the classical picture to which I shall remain faithful. This

picture involves three parts: (i) A core part, which can be found in any standard logic textbook. (ii) A gloss which tells us how properly to understand the core part. This gloss is not included in the standard textbooks, although it is included in works such as Halmos and Givant (1998). (iii) A minimal extension of the core part to enable us to deal with ordinary language, rather than the formal languages studied in the logic textbooks.²

2.1. The core part. This part comes in two sections: syntax and semantics (or model theory). In the syntactical part, we specify a language: we choose some primitive *symbols*, and then say how they may be combined to form *well formed formulas* or *wfs*. In the semantical part, we define the notion of an *interpretation* of our language, and we say how to determine the *truth* of closed wfs on such an interpretation, via a recursive definition which has one clause for each sort of wf in the language (atomic wfs, negations, universal quantifications, etc.).³ The following piece of terminology is not part of the core view, but will be useful later: for any interpretation M , let TM be the set of wfs of our language which are assigned the value 1 (or T, or The True, etc.) on M by the standard recursive truth definition.

2.2. The gloss. The semantics requires no comment, but two points need to be made about the syntax. First, the symbols of the language (i.e., \neg , \exists , the left bracket, the predicates and variables, etc.) are *individual objects*.⁴ Second, the wfs are finite sequences of these objects, in the *mathematical* sense of 'sequence'—i.e., each formula is a function from some initial segment of the natural numbers to the set of symbols. A wf is *not* a bunch of symbols *lined up in a row*.⁵ Wfs are not lines of ink marks.⁶ Thus wfs cannot literally be touched or even seen (directly) on the pages of logic books. Rather, they are to be found with other abstract objects, such as sets.

2.3. Natural languages. In order to see how the foregoing picture can be applied to natural languages such as English, we need to make a few additional comments, and introduce one new idea. If wfs are mathematical sequences, which do not literally flow from our mouths or pens, then what is the relationship between ink marks, bursts of sound, chalk marks and so on on the one hand, and wfs on the other? I suggest the following picture. I turn on the light *by* flicking the switch. The event of my turning on the light and the event of my flicking the switch are one and the same event; but the switch is not the light, and turning on (what I do to the light) is not flicking (what I do to the switch). Similarly, I utter a wf

by inscribing ink marks of a certain sort, or by producing sound waves of a certain sort. The event of my inscribing ink marks and the event of my uttering a particular wf are one and the same event; but the ink marks are not the wf, and inscribing (what I do to the ink marks) is not uttering (what I do to the wf).⁷

In ordinary language, we typically want to know whether a sentence is true *simpliciter*, not just that it is true on such and such interpretations and false on others. What is going on here is that when we utter a wf, we utter it relative to a particular interpretation: we *mean something*—some particular thing—by the wf we utter. The particular interpretation that is relevant in a given case is often called the *intended interpretation*, but I prefer to follow Islam (1996) and call it the *correct interpretation*. I will suppose that every time you utter a wf, you invoke a particular interpretation of the language—the correct interpretation—and I will say that you utter the wf *relative to* that interpretation. An utterance of a wf is true *simpliciter* if the wf uttered is true (i.e., is assigned the value 1, T, The True, etc. by the standard recursive truth definition) on the interpretation invoked by that utterance of it. In short: truth *simpliciter* is truth on the *correct* interpretation.

Putting these ideas together, suppose you say ‘Helen Clark is tall’. You thereby utter a wf Pa of the language. Now there is an interpretation on which a refers to Don Brash, and P has as its extension the set of females, and on this interpretation the wf you uttered is false. However, this interpretation is not the correct one: when you said ‘Helen Clark is tall’, you did not mean that Don Brash is a female. The correct interpretation of your utterance assigns Helen Clark as the referent of a and the set of tall people as the extension of P —and on the correct interpretation, the wf you uttered is true. Thus your utterance is true *simpliciter*.⁸

In our investigations of philosophical issues to do with natural language, we should, I believe, treat the foregoing classical framework as we treat laws of physics when investigating natural phenomena: alterations to the framework should be countenanced only as a last resort, if the phenomena *really* cannot be accounted for within the framework.⁹ Now it may be that alterations to the classical framework *are* required. I myself think that accommodating the phenomena of vagueness requires such alterations (Smith, 2004). But I shall argue in this paper that the Liar paradox demands no such alterations. As far as solving the Liar is concerned, there

is no advantage to be gained by departing from the classical framework. And crucially, if departures from the classical framework are required to deal with other phenomena of natural language, the solution to the Liar proposed here will still go through, *mutatis mutandis*, in the modified framework. In this sense, what I shall propose is not a specifically classical solution to the Liar, but a general template for producing a solution to the Liar within your favourite syntactic-semantic picture, illustrated with respect to the simplest and most widely-used picture available: the classical one.

3. The Liar paradox and its solution. Suppose I write:

A: Sentence A is not true.

The paradox here is as follows. If my sentence is true, then this means that what it says is the case *is* the case, and what it says is that it is not true, so it is not true. If it is not true, then this means that what it says is the case is *not* the case, and what it says is that it is not true, so it is not the case that it is not true, that is, it is true. Yet of course the Liar must be either true or not true—for either it is true, or . . . it is *not*—so we have a contradiction.

Translating this intuitive reasoning into the terms of the classical framework gives us the following. When I write:

A: Sentence A is not true.

I thereby utter a certain wf $\neg Ta$ of the language, relative to a particular (correct) interpretation M . Now by ‘sentence A’ I mean the very sentence I uttered, so a refers on M to the wf $\neg Ta$ which I uttered; and by ‘is true’ I mean *is true*, so T has as its extension on M the set TM . Now we are in the classical framework, so the wf I uttered must either have value 1 or value 0 on M . If it has value 1, then (by the clause for negation) the wf Ta has the value 0, so (by the clause for atomic wfs) the referent of a (which is the wf I uttered) is not in the extension of T , i.e., is not in TM , so the wf I uttered has value 0 on M . But if it has value 0, then the wf Ta has the value 1, so the referent of a (which is the wf I uttered) is in the extension of T , i.e., is in TM , so the wf I uttered has value 1. Contradiction.

This is not now a paradox: it is a *proof*. It is a proof that there *is no* interpretation M on which the name a is assigned the wf $\neg Ta$ as its referent

and the predicate T is assigned the set TM as its extension. This means that when I wrote what I wrote above and thereby uttered a wf $\neg Ta$, on the correct interpretation of my utterance either a did not refer to the wf I uttered, or T did not refer to the set TM . In plain language, this means that when I write:

A: Sentence A is not true.

either 'sentence A' does not refer to the sentence I utter, or 'is true' does not pick out the set of sentences which are true on the correct interpretation of my utterance. Simpler still: either I do not refer to the sentence I utter, or I do not say of what I refer to that it is not *true*.

I claim this is the *solution* to the Liar paradox. There is no paradox, because there is no Liar sentence—that is, no sentence which says of itself only that it is not true. When you try to construct such a sentence, you fail: either you do not refer to what you wanted to refer to (the very wf you uttered), or you do not say of what you do refer to that it is not *true* (that is, the predicate you utter does not have TM as its extension, where M is the correct interpretation of your utterance). At this point I expect this sounds absurd. My task in what follows will be to convince you that this is indeed the correct solution to the Liar paradox. I begin by responding to some objections, and eventually unearth the core belief which makes us resist the proposal just outlined. This is the belief, mentioned at the outset, which we need to give up in order to solve the Liar paradox—or rather, in order to feel that the solution just outlined really is the correct solution.

4. First objection. "Look, this is just nonsense! I *did* refer to my own sentence, and I *did* say of it that it was not true. After all, *what could have stopped me?* There were no guardians of classical logic present ensuring that I did not refer to forbidden things. Do you think that some spirit—Quine's ghost, perhaps—hovers around and ensures that no-one can make the name and predicate in the wf $\neg Ta$ refer in such a way as to generate paradox? That is complete nonsense. But in the absence of such mysterious constraints, there is nothing to stop us uttering Liars!"

What stops us uttering Liars? Nothing! Of course there are no mysterious constraints of the sort just mentioned. And yet we cannot utter Liars nevertheless. Why? Because there aren't any to utter. What we saw above was that there just *is no* interpretation M of the language on which

a refers to the wf $\neg Ta$ and T has TM as its extension. Thus, no constraints are needed to prevent us uttering wfs relative to such interpretations. Compare the barber who sets out to shave all and only those who do not shave themselves. No mysterious forces stay, or force, his razor hand; and yet he must fail. Or think of Juan Ponce de Leon searching Florida for the fountain of youth. What stopped him from finding it? Nothing! The point is that there was no fountain of youth for him to find, and hence no constraints were required to stop him finding 'it'. Contrast the Liar with the case of the emperor's cat, which exists, but to which no-one is allowed to refer by name, on pain of death. The emperor has semantic guardians who ensure that no wf is ever uttered relative to an interpretation which assigns the emperor's cat as the referent of a name in the language. This is hard work, and the guardians are well rewarded. But this sort of case—where there exist interpretations which assign the emperor's cat as the referent of a name in the language, but these interpretations are forbidden—is quite different from the Liar case, where there just *are no* interpretations of the offending sort, and hence nothing special required to stop us uttering wfs relative to such interpretations.

5. Second objection. "All right, let's suppose that on the correct interpretation M of my utterance, either the name I uttered did not refer to the wf I uttered, or the predicate I uttered did not have the set of true-on- M wfs of the language (as specified by the standard recursive definition of truth) as its extension. What then *did* my name refer to, or what *was* the extension of my predicate?"

I can best respond to this objection by drawing a parallel with the auto-infanticide paradox which arises in connection with backwards time travel. The paradox runs as follows. If backwards time travel were possible, then there would be nothing to stop a person travelling back in time and killing herself as a child. This would involve a contradiction: the time traveller both grows up to make a time trip, and does not grow up, because she dies as a child. So if backwards time travel were possible, there would be nothing to stop contradictions being true. Hence backwards time travel is impossible.

If we wish to defend the possibility of backwards time travel, we need to show that it can occur *without* auto-infanticide occurring. To this end, some science-fiction writers suppose that time travellers are accompanied by chaperones or Time Lords or chronology guardians who prevent

the time travellers from changing the past; others posit mysterious contradiction-preventing forces which prevent time travellers from pulling triggers and getting pins out of grenades, or cause bullets to fly off course in mid air, and so on. But apart from being immensely unappealing in themselves, these responses are all over-reactions. As David Lewis has shown, no strange devices are required to stop the time traveller killing her younger self. Rather, she fails “for some commonplace reason” (Lewis, 1976, p. 150): her gun might jam; a noise might distract her; she might slip on a banana peel; and so on. Nothing more than such ordinary occurrences is required to stop the time traveller killing her younger self. Hence backwards time travel does not imply the truth of contradictions, even in the absence of chaperones and special forces. Hence backwards time travel is *not* impossible.

This *coincidences solution* of the paradox is structurally analogous to the resolution of the Liar outlined above. Auto-infanticide generates a contradiction; but auto-infanticide does not occur. Either the would-be committer of auto-infanticide fails to kill the person she is facing (she slips on a banana peel, etc.), or the person she kills is not in fact her younger self (some error has caused her to face another person who merely looks like her younger self, etc.). A Liar sentence generates a contradiction; but Liar sentences do not exist. Either the would-be Liar sentence does not say of what it refers to that that thing is not true; or it does not refer to itself.

In each case the solution is negative: we are told that something goes wrong, and contradiction is thus avoided. Suppose we ask: “OK, but what exactly will go wrong? What *will* happen when the time traveller tries to kill her younger self?” I think it is quite clear that the coincidences solution of the time-travel paradox is not deficient because it does not answer this question. Any one of innumerable many things could go wrong—your gun could jam, you could slip on a banana peel, a bird could intercept your bullet—and we just have no idea in advance exactly what will happen. The same goes in the case of the Liar. I say that when you try to utter a Liar sentence, something will go wrong, and either you will not refer to the wf you utter, or you will not say of what you refer to that it is not true. But I have no idea exactly what you *will* end up saying (i.e., meaning by what you say). Perhaps when you say ‘This sentence is not

true' you will refer to a wf other than the one you utter; perhaps you will refer to the Queen of England; perhaps you will refer to the wf you utter but say of it that it is not an elephant; and so on. The fact that my solution to the Liar does not include a specification of which of these possibilities will obtain *does not make it deficient*—just as the coincidences solution to the auto-infanticide paradox is not deficient because it tells us only that something will go wrong when the time traveller tries to kill her younger self, without telling us exactly what will go wrong.

6. Third objection. "Point taken. But there is still a big difference between the auto-infanticide case and the Liar case. In the auto-infanticide case, we cannot say *in advance* what will happen when the time traveller tries to kill her younger self. But if we wait and watch, we can say, afterwards, what did happen. In the Liar case, we cannot even do that. Even after the fact of my utterance, all you can tell me is that either I did not refer to the wf I uttered, or I did not say of what I referred to that it was not true. This is mysterious in a way in which the auto-infanticide case is not. Furthermore, this is what I had in mind when I made my previous objection! What I asked you last time was 'What then *did* my name refer to, or what *was* the extension of my predicate?' Note the tense here. You have not answered these questions; nor have you shown why you should not have to answer them."

As a thought experiment, imagine that there are *reference rays*,¹¹ and suppose that you have a reference ray detector. When someone makes an utterance, your detector allows you to *see* the correct interpretation of her utterance. You see which wf she utters; you can see a ray coming off each name in this wf and hitting some object in the domain; and you can see a ray coming off each (*n*-place) predicate in this wf and striking some set of (*n*-tuples of) objects from the domain. Now suppose the situation is as follows. I write:

- A. Australia is an island.
- B. Sentence A is not true.

Through your detector, you see me utter two wfs, *Pb* and $\neg Ta$, relative to an interpretation *M*. You see a ray from *b* striking Australia, a ray from *P*

striking the set of islands, a ray from a striking the wf Pb , and a ray from T striking the set of wfs TM . Now I relabel my sentences as follows:

A. Sentence A is not true.

B. Australia is an island

Through your detector, you see me utter two wfs, $\neg Ta$ and Pb , relative to an interpretation M . You see a ray from b striking Australia, a ray from P striking the set of islands, and then you either see a ray from a striking the wf $\neg Ta$ and a ray from T striking some set other than TM , or you see a ray from a striking something other than the wf $\neg Ta$ and a ray from T striking the set TM . “Yes, but I wanted to know specifically what was struck—not just that it was something *other than* a given thing. So tell me, exactly which things get hit?” I don’t know! You have the reference ray detector, not me—so you tell me! But seriously, the point here—and it is indeed a serious point—is that just because we cannot *find out* what I referred to when I uttered my would-be Liar sentence, this does not in any way undermine the claim that there are particular facts of the matter concerning what I picked out using my name and predicate. On the classical picture, *the facts are there just as much as they would be if there were visible reference rays*. If you had a reference ray detector, you would be satisfied, and would regard the auto-infanticide case and the Liar case as analogous; but just because there are no reference rays, this does not make the cases disanalogous in any important way. The Liar case is like the case of the time traveller who attempts to commit auto-infanticide at the bottom of a very deep hole, where none of us can see what happens, and where neither the older nor the younger version of the time traveller will talk about it afterwards. In both cases, there are particular facts about what happens when we try to do the impossible (commit auto-infanticide, or utter a Liar wf); whether or not these facts are observable is just irrelevant.

7. Fourth objection. “It’s not irrelevant at all! *We make meanings!* If no-one says what the name and predicate in the sentence ‘Sentence A is not true’ are to mean, then they do not mean anything. Likewise, if someone does say that they do mean some particular thing—for example, that the name uttered refers to the wf uttered, and ‘is true’ picks out the set of sentences which are true on the correct interpretation of that wf—then

they do mean these things. *Meanings* just do not run around independently of *meaners*! There cannot just *be* these meaning facts out there, independently of what we want and of what we can even detect.”

Now we get to the heart of the matter. The opinion just expressed—or rather, a more precise and less bold version of it which we shall see in a minute—is the core belief which we must relinquish in order to solve the Liar paradox—or more correctly, in order to recognise the solution proposed above as the correct solution. First we need to work out precisely what the core thesis is. Here’s one view the objector might hold:

Semantic Omnipotence. A name or predicate of a language *L* has a particular referent or extension if and only if the speakers of *L* decide that the name or predicate should have this referent or extension.

Four sorts of example will lead us to tone down, and clarify, this view. (i) *Externalism*: The ancients, who knew nothing of chemistry, referred to H₂O when they used the term ‘water’ (or their word for water, whatever it was). But they did not *decide* to use ‘water’ to refer to H₂O: after all, they had never heard of H₂O! (ii) *Reference borrowing*: I never *decided* that the predicate ‘is green’ should mean anything in particular. Rather, I learned the proper use of this predicate, and thereby came to mean by this predicate what those who taught me the language use it to mean. (iii) *Anaphora*: I might decide that when I utter the following sentence, ‘Bill’ will refer to Bill, and ‘he’ will refer to Ben:

Bill was really excited about going to the movie, but in the end he stayed at home.

I then utter the sentence (without any demonstration to accompany ‘he’). Despite my decision, I referred to Bill when I said ‘he’. We cannot just decide to refer to things willy-nilly: there are over-arching semantic laws—such as those governing anaphoric links—by which we live. (iv) *Indexicality*: Suppose a poster saying ‘Your country needs you!’ is posted on a billboard, where, as it happens, only one person—Bob—ever reads it. On the occasion of Bob’s reading the poster, the poster says that Bob’s country needs *him*, i.e., Bob. But the poster maker did not decide to refer to Bob—she has never even heard of him! In light of these four examples, let us refine our thesis:

Semantic Regularity. There are perfectly reliable, principled relationships between our behaviour, mental states and physical environment on the one hand, and what we mean by our utterances on the other hand.

For example: If one points to various samples of stuff while intoning some new word, that word will come to refer to the natural kind underlying the samples, if there is such a natural kind. (That's how 'water' got to refer to H_2O , and that's why 'water' on Twin Earth refers to XYZ.) If we are learning an existing language, and we make the sound 'is green', then we utter a predicate which has the same extension as that uttered by our language-teachers when they made the sound 'is green'. When you make an inscription of the form '*a* was blah, but in the end he did blah', then if '*a*' refers to a male person, 'he' refers to that person too. If you write 'you' on a poster, then on the occasion of someone reading the poster, 'you' refers to that person. And so on and on. We cannot mean whatever we like whenever we like it; however, there are perfectly regular and principled patterns relating the sounds we make in given circumstances to what those sounds mean in those circumstances.

My view is that the Liar forces us to reject this picture. Sometimes we go through all the right motions, but our words just don't come out meaning what we wanted them to mean. Mostly, when you say 'This sentence is . . .', you refer to the wf you thereby utter; and mostly, when you say '. . . is true . . .' you pick out the set TM , where M is the correct interpretation of your utterance. But these relationships cannot be perfectly reliable, because when you say 'This sentence is not true', either you do not refer to the wf you thereby utter, or you do not say of it that it is not true.

Consider again the auto-infanticide paradox. There is no paradox. The attempt at auto-infanticide simply fails. But there is a strange consequence. If backwards time travel is possible, then there cannot be perfectly reliable killing machines and perfectly reliable methods for locating persons. For suppose you have a ray gun, which, when pointed in a certain direction, invariably kills anything in front of it for a range of ten kilometres; and suppose you have a shoulder-launchable satellite imaging system which can locate a given person with perfect accuracy and radio their location to you (or even directly aim your gun). Then you could find your younger self, and kill him or her. But you can't do that. However

reliable your devices are, they cannot be *perfectly* reliable if there is backwards time travel: they cannot work in *every* circumstance, if one of the available circumstances involves you looking around in your own past for your own younger self, with the intention of killing him or her. The same point can be made by considering a simpler situation. An *Earman rocket* consists of a firing mechanism and a sensor (Earman, 1972); it fires probe p_i at $t + \Delta$ iff it does not sense probe p_j incoming at t . If there are closed timelike curves then *such a device cannot be perfectly reliable*. For if it is set so that $i = j$ and aimed so that the outgoing probe travels along a closed timelike curve to strike the sensor at firing time minus Δ , then *some part of the machine must malfunction*.

The lesson of the Liar, on my view, is that our referential mechanisms—i.e., our devices of making certain noises or inscribing certain patterns in particular sorts of situation in order to utter wfs with particular meanings—are just the same: i.e., they cannot be *perfectly* reliable. There are circumstances in which they must malfunction. You go through moves—making certain sounds, inscribing certain shapes—which in any ordinary context would see you referring to the wf you utter, and saying of the thing you refer to that it is not true, but something goes wrong. The semantic mechanisms fail, and you do not end up meaning what you wanted to mean.

I have now unearthed the core belief—Semantic Regularity—underlying resistance to the classical solution to the Liar proposed above. If we accept Semantic Regularity, we will be opposed to my solution to the Liar; and as far as I can see, if we reject Semantic Regularity, then there is no *other* reason why we should resist my solution. Having thus fingered the culprit, my task now is to convince you that rejecting Semantic Regularity, and accepting my solution to the Liar, is the right way to go. I shall try to do this as follows. In §8 I argue that there is no acceptable alternative to rejecting Semantic Regularity when it comes to solving the Liar. In §9 I argue that if we do reject Semantic Regularity, we get free solutions to a number of other problems, apart from the Liar: most notably, semantic indeterminacy problems such as those of Quine, Kripkenstein, Davidson, and Putnam; the problem of empty names; and the problem of false precision.

8. Other responses to the Liar. Approaches to the Liar which start off taking a quite different tack from mine either (a) end up incomplete, (b) end up resorting to hand-waving, (c) plainly get the phenomena of English wrong, (d) end up asking us to reject a belief which is even more

entrenched than Semantic Regularity, or (e) end up asking us to buy into something which amounts to a rejection of Semantic Regularity. I cannot present a general argument to the effect that any *possible* approach to the Liar falls into one of these categories; nor can I survey *all* existing approaches to the Liar, and show that each so falls.¹⁰ All I can do here is illustrate my claim by explaining how a number of the most important current approaches to the Liar fall into categories (a)–(e), and then leave the reader with a challenge: show me a solution to the Liar which does *not* fall into any of these categories (and remember that one of the categories encompasses resorts to hand-waving!).¹²

8.1. Kripke. Kripke (1975) starts with an interpretation of the language that assigns an extension to every predicate *except* ‘is true’. He then builds up an extension and an anti-extension for ‘is true’ by a recursive procedure, which has a fixed point. At this point, sentences such as the Liar have not been put into either the extension or the anti-extension of ‘is true’, i.e., they are neither true nor false. Such sentences are called *ungrounded*. So far so good: we have been shown how to interpret the predicate ‘is true’ in a consistent and *regular* way. When we say ‘is true’, there is a reliable relationship between the noises we make and how those noises end up being interpreted. But in presenting his account, Kripke talks about some sentences being ‘ungrounded’. Now there cannot be a predicate in Kripke’s language which means ‘is ungrounded’, for then we could construct a sentence ‘This sentence is either false or ungrounded’, leading to a new paradox. So Kripke just says: well, we cannot express this notion of ungroundedness in the language. There are three ways of taking this. Category (a): In English, we talk of ungroundedness; so Kripke’s language is not a model of English; i.e., his solution is incomplete as an account of what is going on in English when we utter Liar-type sentences. Category (e): Kripke’s language *is* a model of English, in which case we cannot express ‘is ungrounded’ in English. But hang on, we did express it in the course of presenting Kripke’s theory. This can only mean that we cannot *reliably* express this notion: we cannot, whenever we want, utter a predicate which means ‘is ungrounded’. Sometimes we will make the noises that would normally see us referring to the set of ungrounded sentences, but something goes wrong, and we fail to pick out this set (on pain of contradiction). But this is just to say that Semantic Regularity fails. Category (b): Someone might suggest that to deal with ‘is un-

grounded' we just reapply Kripke's story about 'is true'. This, however, is hand-waving. Until we see exactly how this is supposed to be done, this does *not* count as a complete account of what is going on in English when we utter Liar-type sentences.¹³

8.2. Barwise and Etchemendy. According to the Austinian treatment of the Liar in Barwise and Etchemendy (1987), sentences (in general) express propositions, and propositions are determined by two constituents: a situation (i.e., a set of states of affairs) which the proposition is *about*; and a type of situation. The proposition is *true* if the situation the proposition is about is of the type which figures in the proposition. For any situation s , there is a proposition a_s —the *assertive Liar* for s —which says that s is of the type in which a_s is false, and another proposition d_s —the *denial Liar* for s —which denies that s is of the type in which d_s is true. The assertive Liar is always false, and the denial Liar is always true. However there is a twist. The *fact* that the assertive Liar for s is false cannot, on pain of contradiction, be included in the situation s itself, and nor can the fact that the denial Liar for s is true be included in s . A consequence of this is that there is no Liar proposition (assertive or denial) about the whole world—i.e., about the set of *all* facts. Barwise and Etchemendy's response to this is to claim that *no* proposition can be about the whole world.¹⁴

An account of the Liar cannot provide a correct model of English if (assuming the account is written in English) we cannot translate some statement in the presentation of the account into the terms of the account, in such a way that it can then be smoothly handled by the account. Furthermore, this applies not just to statements that can actually be found in the pages of the account, but to any statement whose meaning we can clearly grasp, once we have read and understood the account. Thus, an account of the Liar must be able to handle both what is *said* in presenting the account, and what is *made sayable* by the presentation of the account. It is here that Barwise and Etchemendy run into trouble.¹⁵ It seems that just as I can utter a proposition about the situation that includes the facts in this room, or in this city, or in this country, or on earth, so too I can, if I want, utter a proposition (as long as it is not a Liar proposition) about the situation which includes the facts about *absolutely everything*. In saying that there are no propositions about the whole world, Barwise and Etchemendy would thus seem to be in the position of an IT assistant who

configures your computer in various ways—right in front of your eyes, and without entering any passwords—and then says ‘But you cannot change these settings yourself’. This is literally false: you *can* make such changes; you have just seen exactly how to make them. What the consultant really means is that any changes you make will be *unsupported*. Likewise, propositions about the whole world are *unsupported* in Barwise and Etchemendy’s framework. But there is no reason at all to think either that such propositions do not exist, or that we cannot utter such propositions. Indeed, there is plenty of reason to think otherwise: for it seems intuitively obvious (once we understand Barwise and Etchemendy’s account) that we can say things about (in their sense) the whole world, and there is no principled reason why we should not be able to do so to counter this intuition (in contrast to the principled reasons why we cannot utter propositions about non-actual situations, or why we cannot utter *Liar* propositions about the whole world).

As the situation stands, Barwise and Etchemendy thus fall into category (a): their account is incomplete, because there are propositions of English—propositions about the whole world—which their account does not accommodate. Of course, this situation is easily remedied. For their only reason for banning propositions about the whole world is to avoid *Liar* propositions about the whole world, which generate contradictions. So they could easily admit that there are *some* propositions about the whole world, just not *Liar* propositions. Now, however, they fall into category (e): rejecting Semantic Regularity. For now it cannot be that there are perfectly reliable mechanisms determining which situation the proposition one is uttering is about: for when you try to utter a *Liar* proposition about the whole world, you must fail, and the moves which in any other circumstance would see you uttering a proposition about the world as a whole will instead see you uttering a proposition about some situation which is only a proper subset of the world. No principled reason is given for this failure, other than that it is required to avoid contradiction: the failure is explained from the forbidden end result back down, not from basic principles on up. I suspect it was precisely to avoid such irregularity that Barwise and Etchemendy tried to ban *all* propositions about the world, rather than just *Liar* propositions. The problem with this ban is that it is ineffective: while Barwise and Etchemendy can refuse to support such propositions, they cannot make them not exist—and the ban then serves only to render their account incomplete.¹⁶

8.3. Tarski. Tarski's view renders the Liar sentence non-well-formed.¹⁷ This proposal does not generate a revenge problem. However, as Kripke (1975) and others have observed, it also renders non-well-formed various other sentences which seem perfectly meaningful. This puts his solution in category (c): it gets the phenomena of English wrong.

8.4. Priest. Consider Priest's (1987) treatment of the Liar paradox, according to which the Liar is both true and not true. Bromand (2002) has recently argued that this account of the Liar faces a strengthened Liar paradox. If so, then for reasons similar to those discussed above, the dialetheist solution is either incomplete, or implicitly rejects Semantic Regularity (or resorts to hand-waving to deny that it does either of these). But suppose that dialetheism can solve its revenge problem. It still falls into category (d): it asks us to reject core logical and semantical beliefs (such as the belief that contradictions cannot be true) which are even more entrenched than Semantic Regularity.¹⁸

Lack of space prevents me taking the discussion of other approaches to the Liar any further than this, but I hope I have done enough to lend some initial plausibility to the thesis that other approaches to the Liar fall into one of categories (a)–(e). Those that face a revenge problem are either incomplete, or implicitly reject Semantic Regularity, or resort to hand-waving to deny that they do either of these; while those that avoid the revenge problem do so at the cost of either being obviously inadequate to the phenomena, or rejecting some principle that is even more fundamental than Semantic Regularity.

8.5. The present solution. Note that the view of the Liar which I have presented does *not* generate a reflection problem. I say that the Liar is either true (if it says something such as 'This sentence is not *in German*') or false (if it says something such as '*Proposition *110.643 in Principia Mathematica* is not true'). Now we cannot go on from here to say; "Ah then, but if it is true then it is false . . . and if it is false then it is true . . ."—because it is true (or false) precisely because it does *not* say *of itself* that it is not *true*—and it is only on the assumption that it *does* say this that the paradoxical reasoning can get under way. My whole point is that the Liar does not say what we wanted it to say, so the reflection reasoning is stopped dead in its tracks.

Nor does my account face any sort of revenge problem. I have not, in the course of my presentation, introduced any notions which cannot be expressed in the language modelled in my theory, and handled in the way

that I claim we should handle the Liar paradox. It may seem as though I have. For example, I have talked of the set TM , and yet the expression ' TM ' cannot always pick out what I want it to pick out, on pain of contradiction: it is in no better position than the ordinary expression 'is true'.¹⁹ But of course! This is *my* point, not an objection to it! The crucial thing is that I do not say anything which, on my view, cannot be said. On my view, almost anything can be said on its own. You can utter a predicate T relative to an interpretation M on which T has TM as its extension. You can enumerate the expressions of the language and refer to each one by name. You can utter a predicate T relative to an interpretation M on which T has as its extension the set of Gödel numbers of expressions of the language which are assigned the truth value 1 on M . And so on. It's just that you cannot always do everything at once. English does have the power to talk about the truth of its own sentences, and to refer to those sentences. It just does not have unrestricted power to do both at once. We have referential mechanisms which suffice to do each, but both mechanisms cannot work perfectly together. Sometimes, not all the things we say can mean what we want them to mean, at the same time—i.e., on the same interpretation. But there is nothing which I say in this paper—or which this paper makes sayable—which cannot, according to my view, be meaningfully said in the language modelled. In order to present my view, I only need to refer to various things—such as the symbols and wfs of our language, and the set TM for some interpretation M —individually. Thus I do not need to do anything which cannot, according to my own view, be done.²⁰

Nor does my view face Tarski's problem of being overly restrictive. There is no reason to think things will *generally* go wrong regarding the meanings of what we say. I assume that they will only go wrong when they *have* to. The auto-infanticide paradox does not show that Earman rockets will sometimes fail in contexts which do *not* involve closed timelike curves—only that they cannot always work perfectly in contexts which *do* involve closed timelike curves. Likewise, my view is that our referential mechanisms cannot work perfectly in *every* possible context—but there is no reason at all to think they will not work as they should in ordinary, non-paradoxical contexts. Things need only go wrong when there just *is no* interpretation of the language meeting all the constraints we seek to impose upon the correct interpretation; when there is such an interpretation, there is no reason at all to suppose that we do not speak

relative to it. This is why I said in n.18 that denying Semantic Regularity does not commit one to wholesale semantic flux. Generally, there is no reason at all to suppose that our words mean anything other than what we want them to mean. It is only when there just is no interpretation compatible with all our semantic desiderata that things have to go wrong. I deny that our semantic mechanisms can be *perfectly* reliable: there will always be situations in which they must fail—for example, situations in which one attempts to utter a Liar sentence. But this is a far cry from saying that our semantic mechanisms are generally unreliable. There is no reason to think they will fail in any contexts other than those in which they *have* to fail.

Earlier, we saw that if we accept the classical framework, the view of the Liar which falls out is that either the Liar sentence does not refer to itself, or it does not say of what it refers to that that thing is not true. I advocated accepting this minimal claim as the solution to the Liar: there is nothing more to be said. The upshot is that we must reject Semantic Regularity. Sometimes our words do not mean what we want them to mean: not due to hidden complexities of our semantic mechanisms, operating behind the scenes to produce unforeseen results—i.e., not for some principled, bottom-up reason; but because our words *cannot* mean what we want them to mean, and so our semantic mechanisms simply break or malfunction, and some of our words get assigned meanings more or less randomly.

Many readers will have felt that this was the wrong approach. The correct account cannot be that our semantic mechanisms are classical, and so malfunction in face of the Liar. The true story must be that our semantic mechanisms are more complex than the classical picture allows. There are extra bells and whistles, which mean that what might look like a malfunction from the classical point of view is really just what was supposed to happen. Instead of simple mechanisms which sometimes fail, we have complex mechanisms which are perfectly reliable. To make this more concrete: if, for example, on some occasion when we utter 'is true', we do not speak relative to the classical interpretation M on which 'is true' has TM as its extension, this is not because something went wrong: it is because 'is true' works in a more complex way than that!

The point of the present section has been to try to convince you that this line of thought is a red herring. We can introduce more complex semantic mechanisms surrounding the expression 'is true'—mechanisms which can work perfectly, even in face of the Liar. But typically the problem is that

in doing so, we use *other* words, and we now face the problem that *these* words cannot always mean what we want them to mean. Thus we just shift the lump in the carpet. We are never going to be able to describe a system of semantic mechanisms which assigns meanings to words in contexts and which operates perfectly reliably, even in face of Liar-type phenomena (just as there cannot be a perfectly reliable Earman rocket, in face of closed timelike curves). Once we accept this, we may as well stick with the tried and true, known and loved classical picture. Or at least, we may as well, as far as the Liar is concerned. If some other phenomenon—such as vagueness—requires an alteration to the classical framework, then so be it. We will have a new range of interpretations available. But once again, there will be things we want to say (Liar-type sentences) which cannot be interpreted in a way that makes them mean what we wanted. The Liar is thus in a quite different category from other semantic puzzles, such as the puzzle of modelling vague language. We will never find a semantic framework which makes available a range of interpretations such that anything we might ever utter in any context (including statements about the semantic framework itself) can always mean exactly what we want it to mean. So the Liar can never motivate moving from one semantic framework to another. Rather, its lesson is that *whatever* semantic framework we adopt, there can *never* be perfectly reliable mechanisms relating the noises we make in the contexts we make them to items made available in the semantic framework (assuming that the semantic framework is sufficiently rich to be a *prima facie* correct model of a natural language such as English). Assuming Semantic Regularity, the upshot is that no semantic framework whatsoever is correct—which would mean that there are no semantic facts at all, that nothing we ever say means anything. Better to let go of Semantic Regularity than have it drag us to these depths as it sinks! The lesson of the Liar, then, is that Semantic Regularity fails.

9. Other advantages of rejecting semantic regularity. I have argued that the Liar *forces* us to reject Semantic Regularity. If we do not reject it initially, the revenge problem forces us to reject it later (unless we just leave our ‘solution’ incomplete, or wave our hands, or reject some even more entrenched belief, or insist upon a ‘solution’ which plainly does not give an adequate account of the phenomena). I shall now describe some independent benefits which flow from the rejection of Semantic Regularity.

9.1. Semantic indeterminacy. A number of authors have argued that meaning is much less determinate than we ordinarily suppose. Consider,

for example, Kripkenstein, who challenges you to point to any fact at all about your past self which shows that you meant addition and not quaddition by 'plus' (Kripke, 1982). Kripkenstein argues forcefully that no such facts can be produced. Of course, your present self is in no better position than your past self. The conclusion is that the meanings of the terms you use now are radically indeterminate. There is no fact about you which determines that you mean addition and not quaddition by 'plus', and hence there is no fact of the matter as to whether you mean addition or quaddition by 'plus'.

However, it only follows from there being no fact about you which determines that you mean addition and not quaddition by 'plus', that there *is no* fact of the matter as to whether you mean addition or quaddition by 'plus', if we assume Semantic Regularity. For suppose that there is a perfectly determinate fact concerning what I mean by 'plus': the correct interpretation of my utterances of 'plus' assigns this term a particular binary function on the domain. Given that this fact is not determined by my behaviour and mental states in concert with my environment, Semantic Regularity fails. Thus, if we reject Semantic Regularity, we will not be troubled by Kripkenstein's sceptical puzzle. Although we cannot cite facts about us which determine what we mean—i.e., although we cannot describe principled relationships between what we say and do in what circumstances, and what we mean by what we say—still we do not need to abandon the idea that there *are* perfectly determinate facts concerning what we mean by what we say—and it was the threat that it posed to *this* idea that made Kripkenstein's puzzle worrying.²¹

9.2. Empty names. On my view, there aren't any empty names. Every time you make an utterance, you speak relative to a particular (correct) interpretation of the language. This interpretation is classical, which means, among other things, that it assigns an object in the domain to every name in the language. So consider what happens when you say 'Santa Claus is fat'. You utter a wf *Fa* of the language relative to an interpretation *M* on which *F* has as its extension the set of fat things, and *a* refers to some particular object. Which object? I don't know. Why that object and not some other one? There is no reason: but once we have rejected Semantic Regularity, this fact will not trouble us.

9.3. False precision. Any theory of vagueness which uses *non-vague* language to present a semantics for vague language, faces the problem of false precision. In the case of the epistemicist—who thinks that classical

semantics gives the correct account of vague language—the problem presents itself as follows. The epistemicist tells us that a vague predicate such as ‘is tall’ has a classical extension, which includes (say) persons great than or equal to 6’2” in height, and excludes all other persons. The problem here is that it seems quite clear that our practice does not fix the boundaries of ‘tall’ so precisely—there is nothing about what we have said and done in the past that fixes the boundary at 6’2” rather than 6’1” or 6’3”—and many writers therefore conclude that the boundary cannot *be* so precise. But once we reject Semantic Regularity, we will reject this inference: sure, *we* do not fix the boundary precisely here or there, but that does *not* mean that it is *not* precisely here or there. Similar remarks apply to the fuzzy theorist’s view that the degree of truth of the claim that balding Bob is bald is (say) 0.67. Why not 0.66, or 0.68? Surely our practice does not fix the degrees of truth of vague claims so precisely? Indeed, surely not: but once we reject Semantic Regularity, we will not conclude that therefore the degrees of truth of vague claims cannot in fact *be* so precise. Similar remarks apply to the supervaluationist, who draws a sharp boundary around the persons x such that ‘ x is tall’ is super-true: a boundary which is far too precise to have been fixed by our practice with terms such as ‘tall’. Of course there are proposals for dealing with higher-order vagueness within both the fuzzy and supervaluationist views (Smith, 2004; Fine, 1997), but they cannot possibly avoid the problem of false precision totally, unless they move to a semantic account presented in a vague metalanguage:²² for *any* non-vague theory of vagueness must set out a range of statuses which sentences may have, and then say of each sentence that it has a particular one of these statuses. The problem of false precision is thus very persistent. However, if we reject Semantic Regularity, it is no problem at all.

In the case of the Liar sentence ‘This sentence is not true’, we want to utter a sentence which has the logical form of a negated atomic proposition, and contains a singular term which refers to the very sentence we utter, and a predicate which picks out the set of true sentences of the language—true, that is, on the very assignment of semantic values to items of the language that gives the correct account of what we mean when we say ‘This sentence is not true’. There is no interpretation which meets all these desiderata. My view is that the correct interpretation is therefore chosen at random, from those interpretations which meet as

many of the desiderata as possible. In the cases of semantic indeterminacy and vagueness, the problem is the opposite: *too many* interpretations meet our desiderata (nothing that we say or do fixes that we mean plus not quus, or fixes the lower bound of the tall persons at 6'2" not 6'3", etc.). But the same response applies: out of all the interpretations which are as good as any other, the correct interpretation is chosen at random.²³ We thus achieve semantic *determinacy* through semantic *indeterminism*: on any occasion of utterance, there is one particular thing that we mean; but nothing about what we say or do, together with our context, determines that we mean this rather than something else. I do not deny that this is hard to accept. But the Liar is a very hard problem, and this is its lesson.²⁴

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NOTES

1. Of course it must ask us to give up some such belief, for the Liar would not be a *paradox* if it could be solved without giving up anything.

2. I am very grateful to Amitavo Islam for first introducing me to the general way of thinking behind the gloss and extension to be presented below: conversations with him over a number of years helped me to see the outlines—and the utility—of this kind of view. (The details are mine, however, and I do not know whether Islam would agree with them.)

3. I do not have space here to present the details: any reader unfamiliar with them should consult, e.g., Boolos *et al.* (2002, chs. 9, 10), Mendelson (1987, ch. 2), or Shoenfield (1967, ch. 2).

4. It makes no difference which objects the symbols are: all that matters is that we have the right number of distinct objects. Some philosophers prefer to think of these objects as types, whose tokens are the ink marks inscribed on the pages of logic books and elsewhere; others (myself included) prefer to think of them simply as particular objects, whose nature is unspecified (they *may* be identical to certain types of ink marks, or they may not be).

5. If that was what a wf was, then we would need *two* negation objects (and *two* left-bracket objects, etc.) to make the wf $((\neg Pa \wedge Rb) \vee \neg Pb)$, whereas we have only one negation symbol, one left-bracket symbol, and so on.

6. If they were, then '*Pa implies Pa*' would not be a logical law. It would have the same status as '*Pa implies Rb*'. For (on the view under consideration) both would say that one atomic wf (one ink mark) implies another, *distinct* atomic wf (a distinct ink mark).

7. Likewise, the event of my producing sound waves and the event of my uttering a particular wf are one and the same event; but the sound waves are not the wf, and vocalising (what I do to the sound waves) is not uttering (what I do to the wf). Note that those who think that wfs are types can agree with this, but also be more specific: they can say

that the relationship between the ink mark which I *inscribe* and the wf which I *utter* is that of token to type.

8. Note that nothing in the foregoing requires that every time I inscribe ink marks in the shape 'John went to the bank' I utter the same wf of the language (although on versions of the view that wfs are types of ink marks where the ink marks are typed by shape this *is* required): there might be quite complicated relationships governing which wf is uttered by which pattern of ink or sound in which context. Also, nothing in the foregoing requires that every time I utter a particular wf of the language, the correct interpretation of my utterance is the same.

9. This is not a mere prejudice: I have reasons for holding this view. However, I lack space here to explain these reasons.

10. The general argument would have to be so general—in order to encompass all possible approaches to the Liar—that it is very difficult to see what it could take as a starting-point. The survey would take a long book, not a paper.

11. The general idea of using an imagerie of reference rays as a heuristic for thinking about the view of reference implicit in classical semantics is one which I first heard from Amitavo Islam. See also Putnam (1981, p. 54).

12. Lack of space requires me to assume familiarity on the part of the reader with the views that I shall discuss.

13. Similar remarks to those concerning Kripke's view and the notion of ungroundedness apply to Gupta and Belnap's (1993) revision theory and the notion of *stable truth*.

14. It might seem as though Barwise and Etchemendy face an obvious revenge problem here, in that they are talking about the world, while saying that no proposition can be about the world. But the situation is not so simple. While a proposition cannot be *about* the world considered as a situation, a proposition can still *refer to* the world as an *object*. A statement about (in the *ordinary* sense) the world—for example, 'the world is the set of all actual situations'—could be construed as a proposition about (in Barwise and Etchemendy's sense) a situation which is a proper subset of the world, and which says of that situation that it is of the type in which the world (here referred to as an object) has the property of containing all actual situations. I do not find this imagined reconstrual strategy entirely convincing, but for the sake of argument, let us grant that Barwise and Etchemendy's statements about (in the ordinary sense) the world can be handled within their framework.

15. *Maybe*, in addition, they already run into trouble with their *own* statements about the whole world—see the previous footnote.

16. Similar remarks to those concerning Barwise and Etchemendy's view and propositions about the whole world apply to Burge's (1984) contextualist treatment of the Liar and claims which quantify over the entire hierarchy of interpretations of 'true'.

17. Tarski had two views of natural language: how it *is* (inconsistent), and how it should be (a hierarchy of metalanguages). I am talking about the latter view.

18. Someone might argue that Semantic Regularity is the most entrenched belief of all: if we cannot know that the meanings of our symbols are not changing unknowably as we speak, what can we know? But the denial of Semantic Regularity does *not* involve such wholesale semantic flux, as I shall explain in the next section.

19. How exactly *does* the phrase 'is true' work, on my view? Well, my whole point is that we cannot give a *complete* account of this—that is to say, there just is no perfectly regular relationship between the use of this phrase and the semantic outcome of such use. We can only say: what saying 'is true' is *supposed* to do is utter a predicate *T* relative to an interpretation *M* on which *T* has *TM* as its extension. Mostly this will indeed happen;

but it cannot *always* happen (unless semantic malfunctions never occur with 'is true', only with other referential devices—which is possible of course), and when it doesn't happen, we just don't know what *does* happen instead. Compare the task of describing what a given gun does. We say that when you load it and pull the trigger it fires a bullet at speed x in the direction in which the barrel is pointed. Mostly it does; but it cannot *always* do so. For example, if you try to commit auto-infanticide, it may fail in unexpected ways. What about the T-schema? Well, it is not always satisfied by 'is true'. Here's the T-schema (where \leftrightarrow is the material biconditional): $S \leftrightarrow Ps$. Let's say that a predicate P satisfies the T-schema on an interpretation M if and only if every instance of the schema obtained by replacing ' S ' with a wf, and ' s ' with a name which refers to that wf on M , is true on M . It's not hard to see that a predicate P satisfies the schema on M if and only if its extension on M is **TM** (assuming that there *is* a name for each wf on M). I have argued that the form of words 'is true' cannot invariably be used to utter a predicate T relative to an interpretation M on which T has **TM** as its extension; thus, the form of words 'is true' cannot invariably be used to utter a predicate T relative to an interpretation on which T satisfies the T-schema. This should be no news and should require no separate discussion: for the T-schema is simply a convenient handle on the model-theoretic characterisation of truth (in terms of **TM**) that I have been employing.

20. There is a related issue concerning my talk of the would-be Liar sentence not meaning *what we want it to mean*. How can we want it to mean something which it cannot mean? After all, the offending interpretations *do not exist*, and hence are no more available as contents of thought than as interpretations of sentences. I think a story can be told which justifies talking the way I do—a story in which we think about the features which we want the correct interpretation to have individually, rather than all at once. I do not have the space to tell this story here. But note that even if the story fails, this would not threaten the substance of my account—it would only threaten my use of heuristic turns of phrase such as 'The Liar sentence does not come out meaning what we want it to mean'.

21. Similar remarks apply to other arguments for radical semantic indeterminacy (Quine, 1960; Putnam, 1978, 1981, 1983), but I lack the space here to treat these cases in detail.

22. I argue against making this move in Smith (2001).

23. In the case of empty names, the situation can be of either type: sometimes a name does not (apparently) refer because there are no eligible referents, and sometimes because there are too many.

24. I am grateful to Max Cresswell, Amitavo Islam, Fred Kroon, Ed Mares, Jerry Seligman and audiences at Victoria University of Wellington (March 2004), the University of Auckland (May 2004) and the Inference and Meaning Workshop (Melbourne, July 2004) and the Annual Conference of the Australasian Association of Philosophy (Sydney, July 2005) for helpful comments and conversations.

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