1. Introduction

I aim to establish a new connection between two topics. The first is the aletheic paradoxes (that is, the paradoxes affecting truth, of which the liar is merely the most famous). Nearly as old as Western philosophy itself, work on the aletheic paradoxes is still vibrant today. Contributions to this topic from analytic philosophy have come in roughly three waves. The first wave is based on Alfred Tarski’s work from the 1930s, which gave truth conditions for formulas of first-order predicate calculus and set the stage for much of what came after. Saul Kripke’s seminal paper from 1975 posed serious problems for applying Tarski’s results to natural language and used new mathematical techniques to address the paradoxes. Kripke’s work also inspired a whole generation of new approaches in the 1980s and early 1990s. After something of a lull, the twenty-first century has seen a flurry of new activity—enough to constitute a third wave that is still building.

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1. I use ‘aletheic’ to mean pertaining to truth.
3. Third-wave theorists include Matti Eklund (2002a), Michael Glanzberg (2004),
The second topic is old as well—relativism. Probably around the time Eubulides allegedly formulated the liar paradox (circa fourth or fifth century BCE), Protagoras gave a voice to the view that man is the measure of all things. Since then, formulations of relativism have become more precise but have not fundamentally changed until this century, just a few years ago, when relativism was cast as a semantic theory, or rather, as a family of presemantic, semantic, and postsemantic theories (these terms are explained below); nonindexical contextualism, judge-dependence, and assessment-sensitivity are the most familiar. The debate over their merit has just begun but has accelerated to a breakneck pace. Many of the people involved approach the topic with their own idiosyncratic terms and classifications, which makes the literature difficult to follow. Such is a philosophical topic at its inception. There are few maps of this shifty terrain, but most agree that a semantic relativist about some topic takes truth, insofar as it pertains to that topic, to be relative to some unorthodox parameters.

To my knowledge, no analytic philosophers have connected these two ancient topics. No one I know of says that relativism is an effect of the aletheic paradoxes or serves as an antidote to them. Nor does anyone diagnose the aletheic paradoxes as caused by relativism or link solutions to them as a way of explaining away or dealing with the consequences of relativism. So, the connection forged here is novel but perhaps not totally unexpected, given the prominent role truth plays in each topic.

I propose a solution to the aletheic paradoxes on which truth predicates are assessment sensitive. Truth is not an antecedently plausible topic for a semantic relativist treatment; nevertheless, the aletheic paradoxes give us good reason to think that truth is an inconsistent concept, and there are good reasons to think that semantic relativism is appropriate for inconsistent concepts. Thus, I show that a promising version of the best approach to the paradoxes is an application of semantic relativism to truth itself—arguing from results about the paradoxes and general considerations about language use to aletheic assessment-sensitivity.

The essay is divided into two parts, the first on the aletheic paradoxes and the second on assessment-sensitivity with respect to truth predicates. The first contains an overview of my preferred approach to the paradoxes, which entails that truth is an inconsistent concept and should

be replaced (for certain purposes) by a team of consistent concepts that can do its work without causing troubling paradoxes. The second part considers which treatment is most appropriate for our inconsistent concept of truth. In it, I propose an assessment-sensitivity view of truth, reply to several objections, and review some issues that arise for approaches to the alethic paradoxes.

2. The Alethic Paradoxes

The liar paradox is the best-known symptom of a major problem with our reasoning about truth. It pertains to sentences like:

(1) (1) is not true.

Although there are many ways the argument might go, it is most common to appeal to the following principles about truth:

(T-In) If p, then ⟨p⟩ is true.
(T-Out) If ⟨p⟩ is true, then p.
(Sub) If s = t, and ⟨p⟩ results from replacing some occurrences of ‘s’ with ‘t’ in ⟨q⟩, then ⟨p⟩ is true iff ⟨q⟩ is true.

In these principles, ‘p’ and ‘q’ are sentential variables—they are placeholders for sentences—and ⟨p⟩ and ⟨q⟩ are quote-names for the sentences that fill in for ‘p’ and ‘q’, respectively; ‘s’ and ‘t’ are singular-term variables. From these principles about truth and intuitive logical principles, one can derive that (1) is true and (1) is not true.⁴

There have been, to put it mildly, many suggestions for how to deal with the alethic paradoxes. The vast majority of them are traditional approaches in the sense that they single out a step (or steps) in the reasoning as fallacious. The fallacious move is taken to be either:

(i) a principle about truth (for example, (T-In)),⁵
(ii) a logical principle (for example, excluded middle),⁶ or

⁴ Two other familiar paradoxes affect truth. The first is Curry’s paradox: if p = ‘if p is true, then 0 = 1’, then one can derive ‘0 = 1’ (or any other absurdity); see Curry 1942. The second is Yablo’s paradox: if pn = ‘for all m > n, pm is false’ for n ≥ 0, then one can derive that each pn is both true and false; see Yablo 1993c. As I use the term, all three are alethic paradoxes. There are many others not fortunate enough to have names; see figure 1.

⁵ See Maudlin 2004 for an example and Field 2008, chaps. 6–14, for a survey.

⁶ See Field 2008, chaps. 15–23, for an example.
(iii) an assumption about language or thought (for example, sentence (1) is meaningful). 7

A traditional approach to the paradoxes is typically accompanied by two major worries. First, although it avoids the liar paradox and the other familiar alethic paradoxes, it encounters paradoxes that are structurally similar to the these but involve truth and some other notions—these have come to be called revenge paradoxes. The worry is that if a traditional approach deals with the familiar alethic paradoxes but faces revenge paradoxes, then it does not qualify as an acceptable approach. 8 Second, the principles involved in the derivation of the alethic paradoxes are all so obvious that they seem to be constitutive of the concepts involved. That is, it seems like rejecting one of the principles involved merely changes the subject rather than solves the paradoxes. The worry is that it simply does not seem plausible that we could be mistaken in the way indicated by a traditional approach; so traditional approaches have a major credibility problem when it comes to their diagnoses.

There is an alternative to traditional approaches that seems to avoid the second worry—paraconsistent dialetheism. 9 According to the dialetheist, the liar reasoning is sound, which implies that the conclusion, ‘(1) is true and (1) is not true’ is true. In order to avoid triviality (that is, a trivial consequence relation where every formula is a consequence of every set of formulas), the dialetheist endorses a nonclassical logic in which the rule ex falso quodlibet—aka explosion—(that is, p, ~p ⊢ q) is invalid, and some contradictions are true. At best, dialetheism requires a major revision in what we take to be logically valid inferences, but there are a host of other costs as well. 10 However, it seems to me that the biggest worry is that, to many, the very idea that some contradictions are true is unintelligible.

Notice that, despite their differences, we can think of dialetheism as just another traditional approach that rejects a logical principle, except in this case it is explosion (and the other inference rules linked to it) that we are asked to give up. Instead of making a mistake in the liar reasoning itself, the dialetheist thinks our mistake lies in rejecting its conclusion.

7. See Sorensen 2001 for an example.
8. Although I touch on revenge paradoxes in what follows, they are not the focus of this work—see Shapiro 2011; Scharp 2013, forthcoming; and the papers in Beall 2008 for discussion.
9. See Priest 2006a, 2006b; and Beall 2009.
10. See papers in Priest, Beall, and Armour-Garb 2005 for discussion.
The common core of traditional approaches and dialetheic approaches is the assumption that we can simply reject one of the principles involved in the liar paradox. Both types of approaches invite a similar worry—the principles involved in the derivation of the paradox seem to be constitutive of the concepts involved; (T-In) and (T-Out) seem to be constitutive of the concept of truth, and the logical principles seem to be constitutive of the logical concepts used in the reasoning. If that is right, then it seems that we cannot give these principles up without also giving up the concepts in question along with them. That is, traditional and dialetheic approaches seem to “solve” the aletheic paradoxes by telling us to stop using the concepts involved. Granted, there are many questions surrounding the nature of concepts and constitutive principles, but these should not distract one from the underlying worry—it seems like our very competence with the concepts involved leads us to accept the assumptions and the inferences in the liar reasoning and to reject its conclusion. If that is correct, then traditional approaches and dialetheic approaches to the aletheic paradoxes are deeply flawed.11

It seems to me that any plausible approach to the aletheic paradoxes must explain why we are so taken in by the paradoxical reasoning—why we find it so difficult to accept any of the traditional approaches or dialetheism. There is a small but growing tradition of philosophers who accept this condition as well; although there is no consensus on what to call it yet, I use the term ‘the inconsistency approach’, for reasons that will become clear shortly.

According to inconsistency approaches, we are taken in by the liar paradox by virtue of our conceptual or linguistic competence. If that is correct, then there is something seriously wrong with at least some of the concepts involved. Inconsistency theorists agree that the obvious culprit here is the concept of truth.12 Indeed, on the formulation I prefer, we can say that our concept of truth is inconsistent. Others in this tradition prefer to say that a language that contains a truth predicate is inconsistent.13 I do not see that anything hangs on this difference.

11. See Eklund 2002b, 2008b; and Beall and Priest 2007 for a discussion of some of these points.
12. One might think that one or more of our logical concepts should be blamed instead. Having argued against this point elsewhere, I am not going to rehash the case for blaming truth instead of our logical notions. See Scharp 2008, 2013, forthcoming.
Two prominent dialetheists, Jc Beall and Graham Priest, strike back by arguing that the most well-known inconsistency view around, Matti Eklund’s theory, does not provide the most essential element in an approach to the aletheic paradoxes; namely, an account of truth. They write:

Eklund... does not even say what his own account of truth is.... All standard accounts of truth, including Kripke’s, run into problems of well known kinds (which, again, have nothing whatsoever to do with analyticity, and so to which Eklund’s distinction is irrelevant). All are subject, for example, to strengthened versions of the liar paradox. Thus, if one takes it that the liar sentence is neither true nor false (as does Kripke), then one has only to consider the sentence ‘This sentence is not true’. If it is neither true nor false, it is not true, and so true. Moreover, there are reasons as to why problems of this kind would seem to be inevitable. Such things are well known and there is no need to dwell on them here. We note them only to point out that what is needed to solve the liar paradox is an account of truth, not of the meaning-theoretic status of its principles. Since Eklund does not engage with this issue, there is, in a sense, nothing in his paper to answer. (Beall and Priest 2007, 79)

Beall and Priest (ibid.) conclude that “Eklund’s failure to spell out an account of truth” leaves “him ‘out of the game’ (as it were).” Eklund (2008b, 100) replies to their charge of being “out of the game” by writing, “They are right that there is a particular debate on the liar—indeed, the most central debate—where I do not explicitly have a stand. I do not have, in the terminology earlier introduced, a positive theory of the liar.” I imagine that Beall and Priest would say the same about most of the other members of the inconsistency tradition (for example, Chihara [1979], Tappenden [1993], Patterson [2006], Burgess and Burgess [2011], and me [2007, 2008]).14 For what it is worth, I agree with them. The central purpose of this essay is to get in the game—to provide a theory of truth in the sense of the above quotation that is the centerpiece of an inconsistency approach to the aletheic paradoxes. That is, the aim is to provide a consistent theory of our inconsistent concept of truth that can compete with the other players.15

14. Note that Yablo is an inconsistency theorist who is in the game, but his views are often ignored for some reason—see Yablo (1985, 1993a, 1993b).

15. At the end of this essay, I provide a categorization scheme for approaches to the aletheic paradoxes—in the terminology introduced there, being in the game requires one to have a logical approach to the paradoxes.
I am not going to argue that truth is an inconsistent concept or that an inconsistency approach is superior to the other kinds of approaches to the aletheic paradoxes; I have done so in other work (see Scharp 2008, 2013). Nor am I going to argue that the kind of inconsistency theory I endorse is better than the other members of this tradition; this has been done elsewhere as well (see Scharp 2007, 2008). Instead, the focus of this essay is on the details of what I take to be the right kind of inconsistency approach to the liar.

The central claim of the approach I offer, and what distinguishes it from its rivals in the inconsistency tradition, is that we need to replace the concept of truth with a team of concepts. These replacements can do the work we require of truth, but they are free of its defect (that is, they do not give rise to paradoxes). In addition, they can be used to give an illuminating explanation of our concept of truth, which is the focus of this essay.

2.1. Inconsistent Concepts

The approach I advocate can be summed up in the claim that truth is an inconsistent concept. Of course, that is not very informative unless one knows what inconsistent concepts are. In this subsection, I introduce the idea.

As a rough first step, consider the following definition: a concept is inconsistent if and only if by virtue of one’s competence with it, one is led to accept inconsistent beliefs. Note that one is not inevitably led to accept inconsistent beliefs, but one’s conceptual competence in these cases can make some inconsistent beliefs seem inevitable.

It would be nice to have an example. What I see as inconsistent concepts have figured in philosophical discussions outside of the literature on truth—Arthur Prior (1960) introduced the connective ‘tonk’ in an attempt to undermine inferential-role theories of the logical operators, Michael Dummett (1973) discussed the pejorative ‘Boche’ while motivating his views on meaning and assertibility conditions, and Hartry Field (1973) focused on ‘mass’ as it was used in Newtonian mechanics in his papers on referential indeterminacy. I use Field’s ‘mass’ example as an analogy.

In Newtonian mechanics, physical objects have a physical quantity, mass. According to this theory, mass obeys two laws (which are considered equally fundamental): (i) mass = momentum/velocity, and (ii) the mass

16. See also Gupta 1999.
of an object is the same in all reference frames. In relativistic mechanics, physical objects have two different “kinds” of mass: proper mass and relativistic mass. An object’s proper mass is its total energy divided by the square of the speed of light, while an object’s relativistic mass is its nonkinetic energy divided by the square of the speed of light. Although relativistic mass = momentum/velocity, the relativistic mass of an object is not the same in all reference frames. On the other hand, proper mass ≠ momentum/velocity, but the proper mass of an object is the same in all reference frames. Thus, relativistic mass obeys one of the principles for mass, and proper mass obeys the other. Since we live in a relativistic universe (that is, one where momentum over velocity is not the same in all reference frames), mass is an inconsistent concept. That is, before the twentieth century, we used a concept whose constitutive principles are inconsistent with what would come to be certain well-confirmed claims about the world (for example, that momentum/velocity is not the same in all reference frames).17

I want to point out four important features of the mass example. First, if the natural laws of our universe had been different, then the concept of mass might not have been an inconsistent concept. That is a common feature of inconsistent concepts—they are inconsistent relative to an environment in which they are used. Second, no amount of introspection, conceptual analysis, or reflection would have allowed possessors of the concept of mass in the nineteenth century to determine that it is inconsistent. Because it is inconsistent relative to the natural laws of our world, finding out that the concept of mass is inconsistent is an empirical discovery. Thus, at least for some inconsistent concepts, simply possessing them is not sufficient for being in a position to know that they are inconsistent. Third, it would not have made sense to avoid the inconsistency described above by giving up one or more logical principles involved in the reasoning in question. The problem was obviously with Newtonian mechanics and its concept of mass. Fourth, inconsistent concepts can be useful. The concept of mass was extraordinarily useful and did not cause its possessors any trouble for centuries. Moreover, we still use it

17. Field does not say that the concept of mass is inconsistent; that is my formulation. However, he does say that ‘mass’ figures in two “central tenets of Newtonian mechanics” that are “both extremely central to Newton’s theorizing and to his scientific practice.” Field 1973, 101, 102. If these central tenets are constitutive of the concept of mass, then mass is an inconsistent concept. For discussion of this example, see Earman and Fine 1977, Field 1994, Jammer 2000, and Petkov 2009.
frequently. If someone wants to design a house, the concept of mass will work just fine. The challenge is to understand this practice—how can we still use an inconsistent concept knowing full well that it is inconsistent?

With these features in mind, I want to present a better definition of ‘inconsistent concept’:

\[(IC) \text{ A concept } \chi \text{ is inconsistent if and only if } G \cup F \text{ is an inconsistent set, where } G \text{ is the set of } \chi \text{'s constitutive principles, and } F \text{ is a set of facts.}\]

Given that momentum/velocity is not the same in all reference frames, the concept of mass is inconsistent. My aim in this essay is to sketch a theory of truth on which truth is an inconsistent concept.

2.2. Descriptive Projects and Prescriptive Projects

In the late 1970s and early 1980s, several theorists working on the liar paradox reflected on what one might be doing in presenting an approach to it. Following Charles Chihara, Anil Gupta, and Stephen Yablo, we can identify the following projects:

- **Diagnostic project**: specifies and explains the causes of the aletheic paradoxes.

- **Preventative project**: says what must be done to keep them from arising in artificial languages that can be used to model our semantic concepts.

- **Descriptive project**: explains the use and meanings of truth predicates in natural language.

- **Semantic project**: provides a philosophical theory that systematically yields semantic results that accord with the intuitions of natural language speakers.

- **Psychological project**: specifies how natural language speakers arrive at their views on semantic issues (for example, the truth values of sentences).

- **Prescriptive project**: specifies how we should change our natural language in light of the aletheic paradoxes.

18. Chihara (1979, 590–91) discusses the diagnostic project, the preventative project, and the prescriptive project. Gupta (1982, 1–2) distinguishes the descriptive project from the prescriptive project. Yablo (1985, 297–300) distinguishes the semantic project from the psychological project.
My aim in this essay is to provide the details of the descriptive project (semantic version). Along the way, I address the diagnostic project and the prescriptive project as well; indeed, this entire section is dedicated to them. I have already mentioned my view on the diagnostic project—the aletheic paradoxes arise because truth is an inconsistent concept. In the following subsections, I say more about my view on the prescriptive project, but I have already indicated my commitment to replace our inconsistent concept of truth because it is imperative that the descriptive project does not employ the concept of truth.19 Instead, if the descriptive project offers the kind of theory that traditionally employs the concept of truth, it should be altered so as to employ the replacement concepts instead. In trying to specify the semantic features of the truth predicate, especially when it runs into trouble, we should not be using the truth predicate. The upshot is that the descriptive theory I offer appeals to the replacement concepts posited by the prescriptive theory.

2.3. The Prescriptive Project

Given that truth is an inconsistent concept, how should we change our natural language or conceptual scheme? First off, changing our logic is not a good option for the inconsistency theorist, who sees the aletheic paradoxes as symptoms of a defect in our concept of truth, not our logical concepts. Although there is a place for disputes about which logic (or logics) people use (or should use), none of the standard alternatives (for example, intuitionistic logic (I), the logic of entailment (E), and the logic of relevant implication (R)) are weak enough to avoid the aletheic paradoxes. So it seems that considerations about logic or reasoning alone will not solve them. Moreover, since the inconsistency theorist thinks that our concept of truth has constitutive principles that are inconsistent (relative to some claims about the world) and does not accept contradictions, he or she will not accept that all of truth’s constitutive principles are true. Thus, the inconsistency theorist’s position is that we should reject one or more of truth’s constitutive principles that lead to the contradictions via reasoning in the aletheic paradoxes. Finding fault with one of the logical principles involved in the reasoning as well would be overkill. In addition,

19. I argue in Scharp 2007 that if Eklund’s inconsistency theory of truth is correct, then the concept of truth to which it appeals cannot do the work required of it by the theory; similar problems confront any descriptive theory of our inconsistent concept of truth that casts the concept of truth in an explanatory role.
from the perspective of an inconsistency theorist, our response to the
defect in our concept of truth should be no different than our responses
to defects in other useful concepts throughout history. We did not try to
keep Newtonian mechanics and its concept of mass in light of conflicting
empirical discoveries by revising our logic to avoid inconsistencies in our
belief system. Instead, we admitted that the Newtonian theory and the
concepts it implicitly defines need to be replaced for certain purposes. Of
course, an inconsistency theorist might not accept classical logic, but
these considerations suggest that as a methodological principle, an incon-
sistency theory of truth should be compatible with classical logic so that it
is as uncontroversial as possible.

An inconsistency theorist who thinks we should replace our con-
cept of truth (at least for certain purposes) has a choice to make: what
should the replacement(s) be? It is tempting to opt for a single replace-
ment concept, but there are good reasons to reject this strategy.

First, it is widely accepted that we use ‘true’ to endorse proposi-
tions that we cannot assert directly; for example, Ralph can assert ‘the
Riemann hypothesis is true’ and thereby endorse the Riemann hypo-
thesis even though he does not remember or has never learned which sen-
tence expresses it, or he can assert ‘all the axioms of ZFC are true’ and
thereby endorse all the axioms of ZFC even though there are too many for
him to assert one by one. We can capture this role by saying that a truth
predicate functions as a device of endorsement. The flip side of this role is a
device of rejection; he can say ‘the Riemann hypothesis is not true’ and
thereby reject the Riemann hypothesis. In order to serve as a device of
endorsement, the truth predicate must obey (T-Out), and in order to serve
as a device of rejection, the truth predicate must obey (T-In). Of course,
we already know that in a classical setting, no single concept obeys these
two principles; thus, no concept can serve as both a device of endorse-
ment and rejection given classical logic and the expressive resources to
construct liar sentences. However, as I shall show, if we replace truth with
two concepts, we can split the workload, allowing one to serve as a device
of endorsement and the other to serve as a device of rejection.

The huge variety of aletheic paradoxes hidden in the principles
that truth seems to obey constitutes a second reason to use a team of
replacements. Here is a sample of the many principles that truth seems
to obey:

20. See McGee 1991, 102–3, for a similar argument and Horsten 2011, 136–7, for an
alternative view.
Disquotational Principles

(T-Out) \( T((p)) \rightarrow p \)
(T-In) \( p \rightarrow T((p)) \)
(T-Elim) \( T((p)) \vdash p \)
(T-Intro) \( p \vdash T((p)) \)
(~T-Elim) \( \sim T((p)) \vdash \sim p \)
(Cat) \( \vdash p \rightarrow \vdash T((p)) \)
(Co-Cat) \( \vdash T((p)) \rightarrow \vdash p \)

Truth-Functional Principles

(~-Imb) \(^{21}\) \( \sim T((p)) \rightarrow T((\sim p)) \)
(~-Exc) \(^{22}\) \( T((\sim p)) \rightarrow \sim T((p)) \)
(∧-Imb) \( T((p)) \land T((q)) \rightarrow T((p \land q)) \)
(∧-Exc) \( T((p \land q)) \rightarrow T((p)) \land T((q)) \)
(∨-Imb) \( T((p \lor q)) \rightarrow T((p)) \lor T((q)) \)
(∨-Exc) \( T((p \lor q)) \rightarrow T((p)) \lor T((q)) \)
(→-Imb) \( T((p)) \rightarrow T((q)) \rightarrow T((p \rightarrow q)) \)
(→-Exc) \( T((p \rightarrow q)) \rightarrow T((p)) \rightarrow T((q)) \)

Miscellaneous Principles

(Taut) \( T((p)) \) for \( p \) a tautology
(Contra) \( \sim T((p)) \) for \( p \) a contradiction
(T-Del) \( T(T((p))) \rightarrow T((p)) \)
(T-Rep) \( T((p)) \rightarrow T(T((p)))) \)
(TT) \( T(T((p)) \rightarrow p)) \)

Implication Principles

(MPC) \( \left( p_1 \land \ldots \land p_n \rightarrow q \right) \rightarrow \left( T((p_1)) \land \ldots \land T((p_n)) \rightarrow T((q)) \right) \)
(SPC) \( \left( p \rightarrow q \right) \rightarrow \left( T((p)) \rightarrow T((q)) \right) \)
(Sub-In) \( p \leftrightarrow T((p)) \rightarrow T((q)) \)
(MPT) \( T((p_1)) \land \ldots \land T((p_n)) \rightarrow T((q))) \rightarrow \left( p_1 \land \ldots \land p_n \rightarrow q \right) \)
(SPT) \( T((p)) \rightarrow T((q))) \rightarrow \left( p \rightarrow q \right) \)
(Sub-Out) \( T((p)) \leftrightarrow T((q)) \rightarrow \left( p \leftrightarrow q \right) \)

It is reasonable to expect that our theory of the replacement concept(s) should include as many replacement principles—those like the above but formulated with the replacement concepts—as possible. With a single replacement for truth, one will end up with very few of these replacement principles. Consider the study by Harvey Friedman and Michael Sheard (1987) on just twelve principles that truth seems to obey. They document all the possible consistent subsets of these twelve principles. One lesson from their analysis is that trying to find a consistent subset of even the most basic principles we unreflectively take truth to obey is like navigating a minefield—there are so many hidden inconsistencies in seemingly innocuous combinations of just these twelve principles; figure 1 displays their results (any combination not labeled as

\(^{21}\) ‘Imb’ is short for ‘imbibe’.
\(^{22}\) ‘Exc’ is short for ‘excrete’.

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inconsistent is consistent). It depicts seventeen distinct paradoxes just among these few principles.

And it only gets worse when one includes more truth-functional principles, quantification principles, and implication principles. Anyone who advocates replacing truth with a single concept would have to pick the best combination of replacement principles and give up anything like the rest of them. However, as I indicate below, when we replace truth with two concepts, we have the option of accepting some replacement principles that are formulated with one concept and some replacement

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23. T-Intro, T-Elim, ¬T-Intro, and ¬T-Elim are to be read as derivability principles rather than inference rules; for example, T-Intro says that if p is derivable, then T(⟨p⟩) is derivable.
principles that are formulated with the other. In addition, this strategy allows for hybrid principles, which are formulated with both concepts. The theory of the replacement concepts I offer includes a replacement principle for every one of the principles listed above for truth. Such a thing is possible only when we replace truth with a team of concepts instead of a single concept.

Having argued that we should not replace truth with a single concept, we still need to decide on a team of replacement concepts. There are many options here, but one obvious way to go is: pick the smallest inconsistent collection of the most central of truth’s principles and divide them up between replacement concepts. The most plausible candidate collection is: (T-In) and (T-Out). So we should have one replacement concept that obeys an analogue of (T-In) but not the analogue of (T-Out) and another replacement concept that obeys an analogue of (T-Out) but not the analogue of (T-In). Inspired by Quine’s comment that (T-In) encapsulates truth’s function of semantic ascent, I call the concept that obeys (T-In) ascending truth. The other I call descending truth.

2.4. ADT

At this point, we have started characterizing our replacement concepts, but there is more work to be done. Descending truth obeys the principle

\[(D1) \quad D(\langle p \rangle) \rightarrow p,\]

and ascending truth obeys the principle

\[(A1) \quad p \rightarrow A(\langle p \rangle).\]

However, neither can obey the inverse principle on pain of contradiction. Nevertheless, the potential problems raised by the inverse principles arise only for a few sentences. It does no harm (and a lot of good) to let descending truth obey a restricted version of (T-In) and let ascending truth obey a restricted version of (T-Out). I use the term ‘safe’ for sentences for which ‘p → D(⟨p⟩)’ and ‘A(⟨p⟩) → p’ are correct.

Using the defining principles for safety and for ascending truth and descending truth, we can derive the following definition of safety:

\[(M2) \quad S(\langle p \rangle) \rightarrow D(\langle p \rangle) \lor \sim A(\langle p \rangle)\]

24. I am excluding the substitution principle from the collection since it seems integral to being a predicate at all.
That is, a safe sentence is either descending true or not ascending true. Conversely, an unsafe sentence is both ascending true and not descending true. A consequence of this result is a clearer picture of the relation between descending truth and ascending truth. We know that if something is descending true, then it is ascending true, and if something is not ascending true, then it is not descending true. Further, some sentences are ascending true and not descending true. However, nothing is both descending true and not ascending true.

There is a tricky issue in specifying the relation between ascending truth and descending truth. Consider the relation between a sentence p, ‘p is ascending true’, and ‘p is descending true’. p follows from ‘p is descending true’ but perhaps not vice versa; hence ‘p is descending true’ is a bit stronger than p. On the other hand, ‘p is ascending true’ follows from p but perhaps not vice versa; hence p is a bit stronger than ‘p is ascending true’. Given these claims, ‘it is not the case that p is descending true’ is weaker than ‘¬p’ and ‘it is not the case that p is ascending true’ is stronger than ‘¬p’. So, what is the relation between ‘p is ascending true’ and ‘it is not the case that p is descending true’? Further, what is the relation between ‘p is descending true’ and ‘it is not the case that ¬p is ascending true’? The most straightforward answer is that they are equivalent, which is the position I accept. That is, A(⟨p⟩) ↔ ¬D(⟨¬p⟩), and D(⟨p⟩) ↔ ¬A(⟨¬p⟩). Thus, ascending truth and descending truth are dual predicates. Their relationship is the same as that that obtains between possibility and necessity, between permission and obligation, between consistency and provability, and so forth.

One of the most difficult problems facing our inchoate theory of ascending and descending truth is a theorem Richard Montague proved in 1963 that has had much more impact on the philosophical discussion of necessity than the discussion of truth. Montague (1963) proved that a theory of some predicate H(x) with the following features is inconsistent:

(i) All instances of ‘H(⟨p⟩) → p’ are theorems.
(ii) All instances of ‘H(H(⟨p⟩) → p)’ are theorems.
(iii) All instances of ‘H(⟨p⟩)’, where ⟨p⟩ is a logical axiom are theorems.
(iv) All instances of ‘H(⟨p → q⟩) → (H(⟨p⟩) → H(⟨q⟩))’ are theorems.
(v) Q (that is, Robinson arithmetic) is a subtheory.

25. Many thanks to Dana Scott who impressed upon me the importance of duality in the theory of ascending and descending truth.
Condition (v) is present to ensure that the language in which the theory is expressed has the ability to refer to its own sentences. The other four conditions are highly desirable for descending truth. On this reading, note that (i) is just the replacement for (T-Out), (ii) says that all instances of the replacement for (T-Out) are descending true, (iii) says that all tautologies are descending true, and (iv) says that descending truth is closed under modus ponens (that is, if a conditional is descending true, and its antecedent is descending true, then its consequent is descending true). Montague’s theorem shows that if descending truth is a consistent concept, then it does not obey all four of these principles. Since I am taking the replacement for (T-Out) to be constitutive of descending truth, my options are to deny (ii), deny (iii), or deny (iv). Denying (ii) results in a theory of descending truth that entails that some of its axioms are not descending true, which is a version of a revenge paradox. I am committed to avoiding revenge paradoxes of any kind (more on this below in section 3.8.2). That leaves us with denying (iii) or denying (iv).

A recent result by Field (2006a) helps make this decision easier. He argues that the standard definition of validity (that is, necessary truth-preservation) is untenable in light of the aletheic paradoxes because it is incompatible with every logical approach to the paradoxes.26 In general, we have two prominent ways of thinking about validity: as the property of canons of good reasoning and as necessary truth-preservation. The lesson of Field’s argument is that given any combination of a theory of truth and a logic, it is unacceptable that the canons of good reasoning necessarily preserve truth.27 This argument of Field’s is relatively new, and it is buried in a much more complex discussion of Gödel’s second incompleteness theorem and formal theories of truth, so it has yet to generate much literature. However, I find it convincing, and this conclusion has an effect on my response to the problem posed by Montague’s theorem because Field’s considerations also sink any attempt to define validity in terms of descending-truth-preservation (assuming classical logic as a background). Thus, any theory of descending truth that accepts conditions (i), (ii), and (iii) of Montague’s theorem has as a consequence that

26. Proponents of substructural views claim that they are not subject to Field’s result; see Ripley (2012, forthcoming) and Beall and Murzi (forthcoming).
27. The effects of this split can be seen all over the literature on logical approaches to the paradoxes. For example, Maudlin (2004) defines validity in terms of truth preservation, and that leads him to claim that (T-In) and (T-Out) are valid on his theory. They are truth preserving according to his theory, but they are not canons of good reasoning according to his theory. See Field 2006b and Maudlin 2006 for discussion.
descending truth is not closed under some derivations. However, it is open to say that all logical truths are descending true. Thus, it makes the most sense to reject (iv) and accept (iii). As such, I stipulate that all classical first-order tautologies are descending true; it follows by Montague’s theorem that descending truth is not closed under modus ponens.28

Although I cannot justify or even describe all the other choices made to fill out the theory of ascending and descending truth, below is the theory, which I call ADT:29

\[ \begin{align*}
(D1) & \quad D((p)) \rightarrow p \\
(D2) & \quad D((\neg p)) \rightarrow \neg D((p)) \\
(D3) & \quad D((p \land q)) \rightarrow D((p)) \land D((q)) \\
(D4) & \quad D((p)) \lor D((q)) \rightarrow D((p \lor q)) \\
(D5) & \quad D((p)) \text{ if } (p) \text{ is a logical truth (for definiteness, if } (p) \text{ is a theorem of classical first-order predicate calculus).} \\
(D6) & \quad D((p)) \text{ if } (p) \text{ is a mathematical truth (for definiteness, if } (p) \text{ is a theorem of Peano Arithmetic).} \\
(D7) & \quad D((p)) \text{ if } (p) \text{ is an axiom of ADT (that is, if } (p) \text{ is an instance of } D1 – D6, A1 – A6, M1 – M4, \text{ or E1 – E3).} \\
(A1) & \quad p \rightarrow A((p)) \\
(A2) & \quad \neg A((p)) \rightarrow A((\neg p)) \\
(A3) & \quad A((p)) \lor A((q)) \rightarrow A((p \lor q)) \\
(A4) & \quad A((p \land q)) \rightarrow A((p)) \land A((q)) \\
(A5) & \quad \neg A((p)) \text{ if } (p) \text{ is a contradiction (for definiteness, if } (\neg p) \text{ is a theorem of classical first-order predicate calculus).} \\
(A6) & \quad \neg A((p)) \text{ if } (p) \text{ is a mathematical falsehood (for definiteness, if } (\neg p) \text{ is a theorem of Peano Arithmetic).}30 \\
(M1) & \quad D((p)) \leftrightarrow \neg A((\neg p)) \\
(M2) & \quad S((p)) \leftrightarrow (D((p)) \lor \neg A((p)))
\end{align*} \]

28. A consequence of this decision is that neither ascending truth nor descending truth obeys the first assumption listed in figure 1. One might worry that this move undermines my argument against the proponent of a one-concept replacement (above). However, the results listed in figure 1 are merely intended to illustrate the vast number of inconsistencies among the principles that truth seems to obey. Even if closure under modus ponens is rejected, there are still many principles a one-concept replacement theorist would have to simply reject.

29. Formulating the principles of ADT with schematic variables is easier to read but not essential. There are some redundancies in this list. I discuss my reasons for this presentation below.

30. Axioms D5, D6, A5, and A6 hold for sentences that contain ‘ascending true’ and ‘descending true’.
(M3) \( p \land S(p) \rightarrow D(p) \)
(M4) \( A(p) \land S(p) \rightarrow p \)

(E1) If \( s = t \), and \( q \) results from replacing some occurrences of \( s' \) with \( t' \) in \( p \), then \( D(p) \leftrightarrow D(q) \).

(E2) If \( s = t \), and \( q \) results from replacing some occurrences of \( s' \) with \( t' \) in \( p \), then \( A(p) \leftrightarrow A(q) \).

(E3) If \( s = t \), and \( q \) results from replacing some occurrences of \( s' \) with \( t' \) in \( p \), then \( S(p) \leftrightarrow S(q) \).

One question that naturally arises is: is this theory consistent or are there new paradoxes hiding in here? Given Gödel’s second incompleteness theorem, all we can hope for is a proof of relative consistency (that is, if some uncontroversial mathematical theory is consistent, then ADT is consistent), and because of the extreme difficulty with saying anything at all consistent about the aletheic paradoxes, a relative consistency proof seems in order. Although relative consistency can be demonstrated via a proof of the soundness of ADT with respect to a particular semantics, it is too technical for this essay.31

I want to emphasize that ADT is a rudimentary axiomatic theory of ascending and descending truth, in the sense that any acceptable theory of ascending and descending truth has ADT as a subtheory. Other principles can be consistently added to it, but a discussion of their pros and cons will have to wait for another occasion. Certainly, one would want quantifier principles,32 and there might be other connective principles that are consistent with it.33 Principles governing iterated attributions might be helpful and consistent with ADT as well.34

One possibly surprising feature of ADT is that neither ascending truth nor descending truth need be preserved under logical deduction. That is, one can have a valid argument with all ascending true premises but a conclusion that is not ascending true; the same goes for descending truth. How disturbing is this result? Not very. By Field’s result discussed above, no classical logical approach to the aletheic paradoxes is consistent

32. For example, if a universal generalization is descending true, then all its instances are descending true.
33. It is obvious that we cannot have ‘\( A(p) \land A(q) \rightarrow A(p \land q) \)’ (because the ascending liar and its negation are both ascending true) or ‘\( D(p \lor q) \rightarrow D(p) \lor D(q) \)’ (because the disjunction of the descending liar and its negation is descending true).
34. For example, \( D(\langle D(p) \rangle) \leftrightarrow D(\langle \neg A(\langle \neg p \rangle) \rangle) \).
with the claim that valid arguments necessarily preserve truth. Thus, as
part of an approach to the alethic paradoxes, one that advocates replac-
ing truth with ascending and descending truth is no worse off than the
other theories that are nontrivial in classical logic. Moreover, it is not
the case that valid arguments might lead one seriously astray. At worst,
if the premises of a valid argument are descending true, then its con-
clusion might not be descending true, but it will be ascending true.35 This
kind of thing will come up only in cases of unsafe sentences.

A consequence is that although all the axioms of ADT are descend-
ing true (by virtue of axiom schema D7), it is not the case that all theorems
of ADT are descending true. In fact, it is easy to find theorems that are not
descending true—I present some of these in the next subsection. It is
because of this feature that there are some redundancies in the list of
axiom schemata of ADT. By including all these axiom schemata, I ensure
that all their instances are descending true. There is much more to be
said about this topic, but space limitations prevent a more thorough
discussion.

Earlier I advertised that this prescriptive theory includes a replace-
ment principle for each of the principles it is commonly thought that
truth obeys. First, note that in the list of principles for truth above, if p and
q are safe, and one replaces each occurrence of ‘T’ with either ‘A’ or ‘D’,
then the result is a theorem of ADT. That result is not all that exciting
because it is restricted to safe sentences. However, for each of the above
principles of truth, there is an unrestricted principle that is either a prin-
ciple of ascending truth, a principle of descending truth, or a hybrid
principle. One can simply look at the definition of ADT for examples
of principles of descending truth or principles of ascending truth that are
from that original list. The hybrid principles are less obvious; the follow-
ing is a list of examples with the original principle of truth on the left and
a hybrid principle that is a theorem of ADT on the right:

<table>
<thead>
<tr>
<th>Principle of Truth</th>
<th>Hybrid Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>( ∧-Imb) T((p)∧T((q))) → T((p ∧ q))</td>
<td>D((p)) ∧ D((q)) → A((p ∧ q))</td>
</tr>
<tr>
<td>( ∨-Exc) T((p∨q)) → T((p))∨T((q))</td>
<td>D((p ∨ q)) → A((p)) ∨ A((q))</td>
</tr>
<tr>
<td>(SPC) (p → q) → (T((p)) → T((q)))</td>
<td>(p → q) → (D((p)) → A((q)))</td>
</tr>
<tr>
<td>(SPT) (T((p)) → T((q))) → (p → q)</td>
<td>(A((p)) → D((q))) → (p → q)</td>
</tr>
</tbody>
</table>

35. Note that we cannot derive this result in ADT because of Gödel’s Second Incom-
pleteness Theorem.
Nothing like a hybrid principle is possible unless one replaces truth with two or more concepts. If one follows the replacement strategy I have outlined here, then one can accept a replacement principle for each of the principles that truth seems to obey. I take that to be strong support for this prescriptive theory.

2.5. Ascending and Descending Liars

The theory of truth is the topic of the next section—here we deal only with ascending truth and descending truth. Thus, since liar sentences, Curry sentences, and Yablo sentences all contain truth predicates or falsity predicates, a discussion of them is reserved for section 3. Here I want to consider sentences like these that contain ‘ascending true’ or ‘descending true’. Consider the following sentences that are the analogues of liar sentences:

\[(2) \quad (2) \text{ is not ascending true.} \]
\[(3) \quad (3) \text{ is not descending true.} \]

Call (2) the ascending liar and (3) the descending liar. It is easy to show that (2) and (3) are each unsafe—that is, they are ascending true and not descending true. The standard argument in the liar reasoning uses both (T-In) and (T-Out). However since neither ascending truth nor descending truth obey both these rules, the standard argument is invalid.

Assume (3) is descending true. Assume (2) is ascending true.

‘(3) is not descending true’ is descending true.
(3) is not descending true.
Assume (3) is not descending true.
‘(3) is not descending true’ is descending true.
(3) is descending true.

The steps leading to the italicized sentences are invalid. In the argument on the left, the inference is from ‘(3) is not descending true’ to ‘(3) is not descending true’ is descending true,’ which is an instance of ‘if p, then D((p))’; this inference rule is not valid in general for descending truth. In the argument on the right, the inference is from ‘(2) is not ascending true’ is ascending true’ to ‘(2) is not ascending true’, which is an instance of ‘if A((p)), then p’; this inference rule is not valid in general for ascending truth. So neither of these sentences poses a problem for
ADT. Moreover, ADT implies that they are ascending true and not descending true (that is, unsafe).

Since Curry paradoxes and Yablo paradoxes follow the same pattern—they depend on applications of both (T-In) and (T-Out)—the results will be the same there. Those sentences are unsafe, and those arguments do not pose a problem for ADT.36

2.6. Empirical Unsafety

It is common knowledge among those who work on the liar paradox that one can construct paradoxical sentences with the use of empirical predicates.37 These sentences are paradoxical because of some empirical facts; if the facts had been different, they would not have been paradoxical. We can say that such sentences are empirically paradoxical.

Philosophers have known of empirical versions of the liar paradox since it first became an object of study over two millennia ago. For example, the predicate ‘is a complete sentence in section 2.6 of Scharp’s “Truth, the Liar, and Relativism” whose first letter is an “E”’ can be used to construct a version of the liar paradox.

Every complete sentence in section 2.6 of Scharp’s “Truth, the Liar, and Relativism” whose first letter is an ‘E’ is not true.

The fact that the previous sentence is the only complete sentence in this section of this essay to begin with an ‘E’ is an empirical fact about that sentence. If I had chosen to place it in a different section or if I had included some other sentences in this section, then it might not have uniquely satisfied that empirical predicate, and, thus it would not have predicated falsity of itself alone. Nevertheless, it seems obvious that this change would not have altered the sentence’s syntactic or semantic features.38

A version of empirical paradoxicality survives in the switch to ascending and descending truth in the form of empirical unsafety. That is, whether a sentence is unsafe can depend on just about any

37. Kripke (1975) emphasizes this point.
38. Did you look at every sentence in this section to confirm? If so, then you now have a great example of knowing the syntactic and semantic features of a sentence without knowing whether it is paradoxical. Think for a moment how bizarre it would be to say that while you were perusing the other sentences of this section looking for ‘E’s, you were learning about the syntax or the meaning of that one sentence.
empirical facts (consider replacing ‘true’ with ‘descending true’ or ‘ascending true’ in the displayed sentence above). Although this point might seem insignificant, it plays an important role in considerations about the correct theory of truth in the following section.

2.7. Grasping Ascending Truth and Descending Truth

One might worry that simply familiarizing oneself with the formal theory ADT is not enough to really grasp the concept of ascending truth and the concept of descending truth. It is, after all, just a collection of axioms. In this subsection, I aim to provide more grounding for the formal theory by doing three things: (i) sketching the way ADT should be physically interpreted, (ii) describing the ways ascending truth and descending truth serve truth’s expressive role, and (iii) showing how ascending truth and descending truth can play truth’s explanatory role in a theory of meaning.

2.7.1. Interpreting ADT

The guiding principle for interpreting ADT is that ascending truth and descending truth should be as close as possible to one another (each one thereby approximating the inconsistent concept of truth). Since the ascending truth values and descending truth values of sentences are different only for unsafe sentences, we can think of the guiding principle as saying that we should strive to minimize the set of unsafe sentences when interpreting ADT.

It is compatible with ADT that for a classical first-order language that contains no semantic vocabulary, ascending truth and descending truth coincide on all of its sentences. That is, none of its sentences are unsafe. That result holds regardless of what kinds of empirical claims or mathematical claims can be expressed in the language. So, in empirical or mathematical discourse, one can reason using either ascending truth or descending truth as if it were a truth predicate. If we add some way for the language to refer to its own sentences and add an ascending truth predicate, a descending truth predicate, and a safety predicate, then the language will contain some unsafe sentences. However, every sentence that is grounded (in something like Kripke’s [1975] sense) is safe.\(^{39}\) That

\(^{39}\) I am using ‘grounded’ in the sense of is such that ascending truth value and descending truth value are completely determined by the ascending truth values and descending truth values of sentences that have no occurrences of ‘ascending true’ or ‘descending true’.

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is, ascending truth attributions and descending truth attributions that eventually ground out in sentences of the original language are safe. In addition, many ungrounded sentences, for example, ‘every sentence is either ascending true or not ascending true’ and ‘no sentence is both descending true and not descending true’ are safe. In short, only sentences that contain ‘ascending true’, ‘descending true’, or ‘safe’ might turn out to be unsafe, and even among those, only sentences that would be paradoxical if ‘true’ were substituted in for these terms might be unsafe.

These results add quite a bit to the understanding of ascending truth and descending truth that one acquires by simply perusing the axioms in ADT. For example, if p and q are grounded, then every principle on the above list of alethic principles is valid when either ‘A’ or ‘D’ is uniformly substituted for ‘T’. Moreover, if p and q are grounded, then they have the same ascending and descending truth values. If one wants to delve deeper into the formal intricacies of ADT, then the next place to look is the semantics that are used to prove the relative consistency result. Unfortunately, presenting this material here would take us too far off track.

2.7.2. The Expressive Roles of Ascending and Descending Truth

It is essential to keep in mind that I am not suggesting that we should stop using ‘true’. For most purposes, it works fine, so there is no need to inform the public with flyers or public service announcements. However, in certain circumstances, for example, providing a semantics for an expressively rich language, one should use the replacement concepts. This situation is similar to what has happened with ‘mass’. People still use the concept of mass frequently—it is a useful inconsistent concept. However, there are situations in which it does not make sense to use ‘mass’, and one should instead use its replacements (for example, when calibrating the atomic clocks on GPS satellites). When should one stop using ‘mass’ and use ‘proper mass’ or ‘relativistic mass’ instead? When the difference between proper mass and relativistic mass is not negligible for the purposes at hand. We can say the same thing about truth—one should use ascending truth or descending truth instead of truth when the difference between them matters for whatever one is trying to accomplish. In practice, if one

40. This is not a trivial result, but I cannot pause to justify it here; see Scharp 2011.
41. See Scharp 2011, 2013, for details.
is not a semanticist, philosopher of language, or logician, then one will probably not ever need to use them.

When people find themselves in a position of wanting to use ‘ascending true’ or ‘descending true’ instead of ‘true’, they have a choice. Assume for simplicity that they are considering a single sentence, p. They can attribute ascending truth or descending truth to p. How should they decide? Remember, descending truth is stronger than ascending truth in the sense that if something is descending true, then it is ascending true, but not vice versa. If they attribute descending truth, and p turns out to be descending true, then their attribution is descending true, which is fine.42 If, however, p is unsafe (that is, ascending true but not descending true), their attribution is unsafe as well. That is not necessarily a bad thing—some unsafe sentences are still assertible, and their attribution is still ascending true.43 If p is not ascending true, then their attribution is not ascending true, which should be treated as we treat an assertion we take to be false.44 On the other hand, if they decide to attribute ascending truth, and p is descending true, then their attribution is descending true, which, again, is fine. Just as before, if p is unsafe, their attribution is unsafe, and if p is not ascending true, then their attribution is not ascending true. Thus, their decision about which predicate to use should be based on how strong a claim they want to make and whether they think that the sentence(s) in question might be unsafe. If they think that they might be unsafe, then they should use ‘ascending true’; if not, they should use ‘descending true’. Remember, this decision only arises in situations where the difference between ascending truth and descending truth is not negligible relative to the person’s interests—since the vast majority of sentences with which one is likely to be concerned are safe, this will rarely be an issue.

42. p is safe (because it is descending true by assumption), so ‘p is descending true’ is safe. If ‘p is descending true’ were not ascending true, then it would follow that p is not descending true. However, we already assumed that p is descending true. Thus, ‘p is descending true’ is descending true.

43. Explaining the relation between assertibility and ascending and descending truth is an important part of the project, but I do not have the space to devote to it here. See Scharp 2013.

44. p is safe. Assume for reductio that ‘p is descending true’ is ascending true. It follows that ‘p is descending true’ is descending true (because p is safe). Thus, p is descending true, which entails that p is ascending true. We assumed that p is not ascending true, so we have a contradiction. Thus, ‘p is descending true’ is not ascending true.
Consider how ascending truth and descending truth perform truth’s expressive role. I mentioned earlier that truth predicates function as devices of endorsement and rejection. How well do ascending truth and descending truth perform these jobs? We know that $p$ follows from ‘$p$ is descending true’, so descending truth functions as a device of endorsement. If a person asserts ‘the Flanders hypothesis is descending true’, then he or she has thereby endorsed the Flanders hypothesis. On the other hand, $\neg \neg p$ does not necessarily follow from ‘$p$ is not descending true’; thus, if one asserts ‘the Flanders hypothesis is not descending true’, one need not thereby have endorsed the negation of the Flanders hypothesis. Instead, for rejections, one would want to use ascending truth; if one asserts ‘the Flanders hypothesis is not ascending true’, then one has committed oneself to the negation of the Flanders hypothesis. Thus, descending truth serves as a device of endorsement, and ascending truth serves as a device of rejection.

2.7.3. Doing Semantics with Ascending and Descending Truth
So far, I have argued in detail that truth should be replaced for certain purposes not by one concept but by two—ascending truth and descending truth. Moreover, I presented the axiomatic theory ADT and explained how it handles liar-like sentences involving ‘ascending true’ and ‘descending true’. I have also described how best to interpret ADT so that the set of safe sentences is maximized and discussed the way ‘ascending true’ and ‘descending true’ are to be used by speakers. One might want still more detail about how to make sense of these concepts.

In this subsection, I follow the broad outlines of Donald Davidson’s strategy for giving a nonreductive theory of truth, except that I am interested in the theory of ascending truth and descending truth. Davidson (1990, 313–14) writes,

> A theory of fundamental measurement of weight, for example, states in axiomatic form the properties of the relation between $x$ and $y$ that holds when $x$ is at least as heavy as $y$; this relation must, among other things, be transitive, reflexive, and nonsymmetric. A theory of preference may stipulate that the relation of weak preference has the same formal properties. But in neither case do the axioms define the central relation ($x$ is at least as heavy as $y$, $x$ is weakly preferred to $y$), nor instruct us how to determine when the relation holds. Before the theory can be tested or used, something must be said about the interpretation of the undefined concepts. The same applies to the concept of truth.
It is a mistake to look for a behavioristic definition, or indeed any other sort of explicit definition or outright reduction of the concept of truth. Truth is one of the clearest and most basic concepts we have, so it is fruitless to dream of eliminating it in favor of something simpler or more fundamental. Our procedure is rather this: we have asked what the formal properties of the concept are when it is applied to relatively well-understood structures, namely, languages.

Davidson’s central methodological commitment is that in lieu of a reductive theory of truth, which he thinks is hopeless, he endorses an axiomatic theory (in Davidson’s case, it is a Tarskian theory) and then aims to chart the connections between truth and other concepts, including meaning, belief, desire, and rationality. I accept this sort of methodology and the analogy Davidson draws between a theory of interpretation and a theory of fundamental measurement. I would love to present this sort of project for ascending and descending truth, but it would be impossible to do anything like this exercise in detail. Instead, let me say a bit about the connection between meaning and ascending truth and descending truth. Arguably, truth serves many other explanatory roles as well, but they will have to wait for some other occasion.45 Please note well: this is not just an illuminating exercise—I use this framework in section 3 when I offer an assessment-sensitive semantic theory for our inconsistent concept of truth.

I am going to assume that the reader has some familiarity with formal semantics in the Montogovian and Kaplanian traditions. Because there is little agreement on the terminology, especially when it comes to more contentious views like nonindexical contextualism and assessment-sensitivity, this presentation follows the recent and influential treatment of formal semantics for natural language by Stefano Predelli (2005). Although any presentation of this topic is bound to generate controversy, I do not think that the details matter—I could have used any recent account.

Predelli is careful to distinguish between a linguistic practice, which consists of rational entities making noises and inscriptions in the course of their interactions with other rational entities, and an interpretive system,

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45. Deflationists about truth usually think that truth should not play an explanatory role at all, but given the importance of truth conditional theories of meaning in linguistics (an empirical science), I find it hard to take this position seriously. Either way, deflationists about truth could accept that ascending truth and descending truth play explanatory roles in semantics in the way outlined below.
which is used as a tool by natural language semanticists to explain facts about the semantic properties of those noises and inscriptions. On Predelli’s view, there is a layer of processing that occurs between the linguistic practice and the interpretive system. For this reason, interpretive systems do not take natural language sentences as input; instead, their inputs are complex structures that result from disambiguating sentences. I use Predelli’s neutral term ‘clause’ for these items.\(^{46}\) In addition, the interpretive system needs information about the context of utterance (for context-dependent expressions). Again, following Predelli, I use the term ‘index’ for the information that gets fed into the interpretive system and ‘context’ for the concrete environment in which the utterance is performed.\(^{47}\) Just as interpretive systems accept only specific inputs, they produce special outputs. The goal is assigning truth conditions to sentences uttered in the linguistic practice, but there is an additional level of complexity between the output of the interpretive system and the assignment of truth conditions. Instead, the interpretive system outputs \(t\)-distributions, which are assignments of truth values to clause/index pairs (or propositions) relative to points of evaluation. The points of evaluation contain information like a possible world and a time.

In order to accommodate the assessment-sensitivity view of ‘true’ proposed in section 3, we need to distinguish between a presemantic theory, a semantic theory, and a postsemantic theory.\(^{48}\) Interpretive systems are semantic theories—they take clause/index pairs as input and produce \(t\)-distributions as output. Presemantic theories take natural language utterances as input and produce clause/index pairs as output. Thus presemantic theories relate natural language utterances to semantic theory inputs. Postsemantic theories take \(t\)-distributions and indexes as input and produce truth values and truth conditions for natural language utterances. Hence, postsemantic theories relate semantic theory outputs to natural language utterances. In sum, we begin with a natural language utterance, run it through a presemantic theory to arrive at a clause/index pair, then use a semantic theory to compute a \(t\)-distribution for that

\(^{46}\) Some theorists deny that there is a distinction between clauses (that is, inputs to a formal semantic theory) and natural language expressions—nothing in my treatment hangs on it.


\(^{48}\) I get the term ‘presemantic’ from Perry 2001 and ‘postsemantic’ from MacFarlane 2005a.
clause/index pair, and finally use a postsemantic theory on that t-distribution to generate truth conditions and a truth value for the natural language utterance with which we began. See figure 2 for a handy diagram.

Again, the terminology here is controversial. The distinction between semantic theory and postsemantic theory is not the distinction between a theory of linguistic content and a theory of pragmatic phenomena like implicature. Rather, the distinction between semantic theory and postsemantic theory is within the realm of linguistic content. It is required by any theory that distinguishes the proposition expressed by

**Presemantic, Semantic, and Postsemantic Theories**

![Diagram of Presemantic, Semantic, and Postsemantic Theories](image_url)

Figure 2.
a sentence (or the content of a linguistic expression) and the truth conditions of a sentence (or the extension of a linguistic expression). As I use the terms, contents, including propositions, are assigned by a semantic theory, and truth conditions and extensions are assigned by a postsemantic theory, which takes as input propositions and contents together with information from the context of utterance (for example, world) and possibly the context of assessment. Many people use ‘semantic theory’ to cover the totality of what I am calling presemantic theory, semantic theory, and postsemantic theory. However, nothing of substance turns on this terminological difference.

Let us now look at intensional semantic theories, which assign truth values to propositions. Following Kaplan (1989), we distinguish between two levels in the semantic theory. At the first level, expressions are assigned a character, while at the second level, the character/index pair is assigned a content. The output of the intensional semantic theory is an assignment of an extension to this content at every point of evaluation (in the case of sentences, their contents are propositions, and their extensions are truth values). As such we can think of characters as functions from indexes to contents, and we can think of contents as functions from points of evaluation to extensions. See figure 3 for a diagram.

The output of an intensional semantics (a t-distribution) is an assignment of truth values to contents at points of evaluation. To get from this to a truth value and a truth condition for the utterance in question, we need a postsemantic theory. It is standard to use something like:

\[ (4) \text{ A sentence } p \text{ is true in a context } u \text{ iff the content assigned to the clause that represents } p \text{ with respect to the index that represents } u \text{ is true at the point of evaluation that represents the world and time of } u. \]

Note that we have defined the truth of a sentence in a context in terms of the output of the semantic theory (more on this below).

After that brief introduction, we are ready to consider how to replace truth with ascending truth and descending truth in this framework. The concept of truth plays no role in the presemantics, so it is fine. The semantics assigns truth values to contents at points of evaluation, and the postsemantics provides a recursive definition of ‘sentence x is true in a context of use’ or ‘sentence x is true in a context of use from a context of assessment’ (depending on whether one admits assessment-sensitive expressions). I claim that truth is not really playing a role in the semantics, but it is in the postsemantics.
Begin with the postsemantics. Although the notions of truth at a context of use and truth at a context of use from a context of assessment are distinct from the concept of truth (that is, the latter is monadic, while the two former are polyadic), they are still susceptible to paradox. In particular consider the following sentences:

(5) For all contexts of use u, (5) is not true in u.
(6) For all contexts of use u and for all contexts of assessment a, (6) is not true in u from a.

These are both paradoxical (indeed, (5) is routinely used in revenge paradoxes for contextual approaches to the paradoxes). 49 This is good
evidence that these concepts are inconsistent (I am not going to argue this point further).

In order to avoid using a postsemantic theory that appeals to inconsistent concepts, we need a new postsemantic theory. There are two obvious ways to do this:

(i) a postsemantic theory that takes as input the t-distribution from a semantic theory (whatever that turns out to be) and outputs the ascending truth value of a sentence in a context of use and the descending truth value of a sentence in a context of use.

(ii) a postsemantic theory that takes as input the t-distribution from a semantic theory (whatever that turns out to be) and outputs the ascending truth value of a sentence in a context of use from a context of assessment and the descending truth value of a sentence in a context of use from a context of assessment.

If a language contains no assessment-sensitive terms at all, then (i) will be fine; otherwise (ii) is appropriate. Note that these theories make use of predicates that we have not seen yet: ‘x is ascending true in context u’, ‘x is descending true in context u’, ‘x is ascending true in context u from context a’, and ‘x is descending true in context u from context a’. ADT, the theory of ascending and descending truth, is a theory of the one-place predicates ‘x is ascending true’ and ‘x is descending true’; thus ADT does not serve as a theory of these new polyadic predicates. Although it might be helpful to develop a formal theory of them, I am not going to do so here. Note that one need not adopt a formal theory of ‘x is true in context u’ to be able to use it in semantics for natural language. For example, John MacFarlane (2005a) appeals to theories of assertion to help readers understand ‘x is true in context u from context a’, but he does not give even an intuitive theory of it, much less a formal theory. From what has been said so far about ascending truth and descending truth, these new predicates should not pose any real problems in understanding. At worst, one would have to say that they are implicitly defined by the postsemantic theory in question.

So much for replacing truth in the postsemantics; what about the semantic theory? A semantic theory outputs a t-distribution, which is an assignment of a truth value to a proposition at each point of evaluation. Does this use of truth need to be replaced as well? I do not think so. If we look at the way the semantic theory works, we can see that it is powered by truth-in-a-model, not truth. Truth-in-a-model is a mathematical concept, and it is not the same as truth. For discussion, fix a model \( \mathcal{M} \). The claim
that some clause is true-in-$M$ is fully representable in set theory as a mathematical function from one set-theoretic entity to another. As long as the relevant mathematical theory (for example, ZFC) is consistent (and we have no reason to think it is not), there is no problem whatsoever with truth-in-$M$. It is not an inconsistent concept.

Still, one might ask, what about paradoxes with truth-in-$M$? As long as our language has the relevant mathematical locutions, we can formulate a sentence such as:

(7) (7) is not true-in-$M$.50

However, there is no reason to think that (7) is paradoxical. For one, (T-In) and (T-Out) fail for true-in-$M$. That is, there is no reason to think that ‘$p$ is true-in-$M$’ follows from $p$ since there is no reason to think that $p$ is even representable in the language for which $M$ is a model, and even if it is representable, there is no reason to think that $p$ would be true-in-$M$. For example, $M$ might assign some bizarre meaning to $p$. In addition, ‘$p$ is true-in-$M$’ does not entail $p$ since there is no reason to think that $M$ represents the way the world is. Obviously, representing the world is the notion that would be needed to get (T-Out), but the semantics does not appeal to it. Consider another sentence:

(8) For all $M$, (8) is not true-in-$M$.

Does (8) pose a problem? No. Quantifying over set-theoretic entities is a complicated business, and explaining why (8) is benign would take us too far afield into the technical details of mathematical logic. It should be sufficient to note that (8) is a mathematical claim, pure and simple. As long as set theory (ZFC will do) is consistent, we know that (8) does not pose a problem.

Still, a question remains: how do we get from a t-distribution (as the output of the semantic theory) to an assignment of ascending truth conditions and descending truth conditions? There are a couple of ways to accomplish this: (i) add an extra slot to the points of evaluation that selects whether we are evaluating the proposition in question for ascending truth or descending truth, or (ii) define ascending-truth-in-a-model and descending-truth-in-a-model and assign values for each indepen-

50. Actually, this is harder than it seems. It is difficult to construct a model for a language that makes one of the singular terms in that language refer to that model. The problem comes in letting the model be a member of the domain that is an element in that very model.
dently to each proposition (for example, assign either 0 or 1 for the ascending-truth-in-a-model value and either 2 or 3 for the descending-truth-in-a-model value). Although (ii) is more elegant and probably the correct way to proceed, it would require a lengthy detour through the semantics for ADT, which is too complex and technical for this essay; it would also treat a proposition as a relation between the set of points of evaluation and \{0, 1, 2, 3\} instead of as a function from the set of points of evaluation and \{0, 1\}, which would need some discussion. So, in this treatment, I follow the vulgar but accessible option (i) and leave (ii) for future work.

The extra parameter to be added to the points of evaluation has only two possible values: A or D. At the point of evaluation \(<w_0, t_0, A>\), where \(w_0\) and \(t_0\) are some world and some time, the proposition in question is assigned 0 if it is not ascending true at \(w_0\) and \(t_0\), and it is assigned 1 if it is ascending true at \(w_0\) and \(t_0\). At the point of evaluation \(<w_0, t_0, D>\), the proposition in question is assigned 0 if it is not descending true at \(w_0\) and \(t_0\), and it is assigned 1 if it is descending true at \(w_0\) and \(t_0\). I call this parameter the aletheic value parameter. The aletheic value parameter is used by the postsemantic theory. To arrive at the ascending truth value for the sentence uttered, one uses the point of evaluation with the relevant world, relevant time, and the ascending aletheic value. To arrive at the descending truth value for the sentence uttered, one uses the point of evaluation with the relevant world, relevant time, and the descending aletheic value. If this presentation is too abstract, the example given in the next section should help illustrate how this proposal works.

In sum, I have shown how to replace truth with ascending truth and descending truth in contemporary semantics. I have suggested that truth should be replaced in the postsemantic theory with ascending truth and descending truth; that is, the postsemantic theory outputs the ascending truth value of the sentence uttered in the context of use and the descending truth value of the sentence uttered in the context of use. Accordingly, the points of evaluation have an extra parameter—the aletheic value parameter—which controls whether the proposition in question is being evaluated for ascending truth or descending truth.

Before moving on, let us consider an objection to this whole project of replacing truth in the combination of a presemantic, semantic, and postsemantic theory (a PSP theory from here on) with ascending truth and descending truth. It is common to motivate truth-conditional PSP theories by saying that those of us who are competent with a natural language have certain implicit or explicit knowledge. We know the syntactic rules

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that determine which strings count as well-formed sentences of that language, and we know the semantic features (for example, referents and extensions) of its basic linguistic expressions. We use this knowledge to decide which sentence of the language to utter in a given situation and how to interpret its sentences uttered by others. A PSP theory for this language explains our linguistic competence because it is our knowledge of this very theory that allows us to count as competent with the language in question. This sort of motivation presupposes that we possess and use the very concept of truth at the heart of a truth-conditional PSP theory for our language. Ordinary speakers clearly do not possess the concepts of ascending truth and descending truth, so if this motivation for PSP theories is correct, then the enterprise of replacing truth in such a theory with ascending truth and descending truth is a nonstarter. No PSP theory that utilizes ascending truth and descending truth instead of truth could be what most competent speakers of a language know.

Given the emphasis on a Davidsonian approach to the nature of truth described at the beginning of this subsection, it should not come as a surprise that I reject the particular motivation for truth-conditional PSP theories on which the objection is based. Instead of thinking of PSP theories as describing a person’s psychological states that are responsible for his or her semantic competence, I prefer a Davidsonian view of their empirical significance. That is, if a person knew a PSP theory, then he or she would be able to understand the language in question. The evidence that supports such a theory comes from the person’s behavior (verbal and otherwise) toward objects in the environment in accord with the procedure used by Davidson’s hypothetical radical interpreter (see Davidson 1973). The theory itself describes certain aspects of what rational entities must be like for them to be able to interpret one another. I prefer to emphasize the aspects of Davidson’s views that are most akin to the theory of fundamental measurement (mentioned at the beginning of this subsection). Probably the most familiar theory of this sort is presented and defended in Robert Matthews (2007), *The Measure of Mind*. Of course, nothing hangs on adopting this kind of justification of truth-conditional PSP theory in particular. There has been a vigorous debate about the relation between PSP theories and semantic competence; the Davidsonian

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52. See Scharp 2013, chap. 7, for more details on this interpretation of formal semantics.
view and the cognitivist view expressed in the objection are but two of the players in this game. Some hold that PSP theories systematize and idealize what speakers actually know, while others claim that PSP theories describe objective semantic facts that are independent of speaker psychology. Any of these views other than the cognitivist one expressed in the objection is compatible with the replacement strategy offered here. I happen to think that there are good reasons to reject the cognitivist view, but exploring this issue further would take us too far afield.

3. Truth as Assessment Sensitive

In the previous section, I introduced the idea that truth is an inconsistent concept and recommended that it be replaced with ascending truth and descending truth for certain purposes. I presented ADT, the theory of ascending and descending truth, as a rudimentary theory of these two replacement concepts (along with the concept of safety). ADT constitutes a prescriptive theory in the sense that it proposes a change to our conceptual scheme and natural language. Again, I am not suggesting that we stop using our truth predicate—only that we stop using it when our interest in using it is outweighed by the problems it causes (that is, the aletheic paradoxes). In these cases, we should use the replacement concepts.

This prescriptive theory is only one part of an adequate inconsistency approach to the aletheic paradoxes. The other major component should be a descriptive theory of our inconsistent concept of truth. One of the central theses of the approach I advocate is that the descriptive theory should not appeal to the concept of truth—otherwise we would be using an inconsistent concept to explain that very inconsistent concept, which is a recipe for disaster. In this section, I offer a descriptive theory of truth that treats truth predicates as assessment sensitive, which is an endorsement of semantic relativism. The descriptive theory uses the semantics described at the end of the last section that appeals to ascending truth and descending truth.

3.1. MacFarlane on a Semantics for Confusion

Confusion occurs when a person thinks there is one thing (or one kind of thing), but there are really two (or more). To return to an earlier

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54. See Scharp 2007 for an argument.
example, after the late 1600s, but prior to the advent of relativistic mechanics, we thought that there is one physical quantity, mass, had by physical objects. However, in the early twentieth century, we realized that there is no physical quantity that obeys the principles we took mass to obey; instead, there are two physical quantities that are somewhat similar to mass: relativistic mass and proper mass. A person who lived in the 1800s and accepted Newtonian mechanics was confused—he or she thought that there is one quantity, mass, but instead there are two. We can say that the concept of mass is a confused concept, where the concept of mass is the concept expressed by ‘mass’. It is confused in the sense that it purports to pick out a single quantity, when in reality, there is no such thing—instead there are two quantities that are relevantly similar to what that single quantity would be like if it existed. Throughout the rest of this work, I use ‘confusion’ in this technical sense, which is considerably more specific than the ordinary sense of the word.

Once one accepts that truth is an inconsistent concept and that it should be replaced by ascending truth and descending truth, it is natural to think that the concept of truth is confused. It turns out that there is no property of truth, at least, if by ‘truth’ we mean a property that satisfies all of what I have claimed to be the constitutive principles of the concept of truth. Instead, there are two properties, ascending truth and descending truth.

I mention confusion here because John MacFarlane has suggested that words expressing confused concepts are assessment sensitive. MacFarlane quotes the following passage from Joseph Camp (2002, 125): “When one first thinks about ontological confusion, it is natural and intuitively plausible to talk in terms of perspectival truth. One wants to say: ‘what the confused person thinks may be true from one perspective but false from another perspective; or it may be true from both perspectives, or false from both’. Perspectival truth must replace truth simpliciter when one evaluates a confused belief.” MacFarlane (2007b, 708) then writes, “In recent work, I have suggested giving significance to perspectival truth by embedding it in a larger theory of language, specifically in a normative account of what it is to make an assertion. I would like to propose, very tentatively, that this kind of framework might be a better home for a ‘semantics of confusion’ than the multivalued, epistemic semantics Camp advocates.” MacFarlane does not give any details, and to my knowledge no one else has advocated anything like this. In the remainder of this essay, I work out the details of MacFarlane’s proposal as it applies to the particular case of ‘true’, using the new semantic
framework described above, where truth has been replaced by ascending truth and descending truth. 55

3.2. An Assessment-Sensitivity Theory of Truth

There are several things one might mean by ‘semantic relativism about truth’. Some use the term ‘semantic relativism’ for two separate views, nonindexical contextualism and assessment-sensitivity. 56 The latter is more radical than the former. Both require an extra parameter in each point of evaluation, but assessment-sensitivity views also require a new postsemantic theory that outputs the truth value of the sentence in a context of utterance from a context of assessment, instead of outputting the truth value of the sentence in a context of utterance. That is, postsemantics for an assessment-sensitivity view requires a three-place predicate ‘x is true in u from a’, whereas the postsemantics for nonindexical contextualist views needs only the more familiar ‘x is true in u’. In this subsection, I present my preferred semantics for the truth predicate, which is an assessment-sensitivity view. Later, I contrast it with several other options, including a nonindexical contextualist view.

Before we begin, it is worth a reminder that the semantic theory and postsemantic theory proposed do not use truth at all. Instead, they use ascending truth and descending truth, in accordance with the policy of not using the inconsistent concept of truth in a descriptive theory of truth (the semantic theory also uses the mathematical concept of truth-in-a-model).

Consider a linguistic practice in which rational agents utter sentences that contain truth predicates; for ease of exposition, we can take them to speak English. For each one of their utterances, the presemantic theory assigns a clause/index pair. The clause represents the sentence and carries information about the sentence’s syntactic structure or logical form—it treats ‘x is true’ as a univocal one-place predicate; the index represents the context of the utterance.

55. See also Pinillos 2010 for a semantic relativist treatment of ‘duration’, which in a Newtonian framework is arguably an inconsistent concept since it seems to presuppose absolute time.

The semantic theory assigns a character to ‘true’, but this character ignores the index since ‘true’ is not an indexical. That is, the content assigned to ‘true’ is invariant across indexes. From the index and the character of the expressions in the clause, the semantic theory assigns a proposition to the clause. The content of ‘true’, of course, contributes to the proposition assigned to the entire sentence. The last step for the semantic theory is to generate a t-distribution for the proposition. Recall that a t-distribution is an assignment of a truth value to the proposition for each point of evaluation; however, the term ‘truth value’ might promote misunderstanding here since the semantic theory uses truth-in-a-model. So, from here on, I use ‘t-value’. Note too that because our postsemantic theory outputs ascending truth value and descending truth value (instead of truth value), our semantic theory already needs an aletheic value parameter in its points of evaluation. That feature stems from replacing truth with ascending truth and descending truth—it has nothing to do with any kind of semantic relativism or specific view on the semantics for the truth predicate.

The specifically relativist feature of the semantics is that the points of evaluation have an additional parameter, which I call the aletheic standard. Thus, the points of evaluation are <world, time, aletheic value, aletheic standard> quadruples. The aletheic standard provides a “reading” of the occurrences of the truth predicate in the sentence in question. There are two possibilities for the aletheic standard parameter: the ascending standard (SA) and the descending standard (SD). The ascending standard interprets the truth predicate as an ascending truth predicate, while the descending standard treats the truth predicate as a descending truth predicate. For example, a sentence ‘p is true’ is assigned t-value 1 at points of evaluation <world, time, aletheic value, SA> iff ‘p is ascending true’ would be assigned t-value 1 at that world, time, and aletheic value; it is assigned t-value 1 at points of evaluation <world, time, aletheic value, SD> iff ‘p is descending true’ would be assigned t-value 1 at that world, time, and aletheic value.

It is crucial to keep the aletheic value parameter and the aletheic standard parameter distinct—the former determines whether the postsemantics is assigning an ascending truth value or a descending truth value to the sentence in question, while the latter determines for sentences containing ‘true’ whether such occurrences are read by the

57. Throughout, I use ‘indexical’ in the general sense that includes any expression whose content depends on the context of utterance.
semantic theory as an ascending truth predicate or a descending truth predicate. If we return to the example just given and take \( w_0 \) to be a world and \( t_0 \) to be a time, then the semantics behaves in the following way:

(i) ‘\( p \) is true’ gets \( t_M \)-value 1 at \( <w_0, t_0, A, S_A> \) iff ‘\( p \) is ascending true’ is ascending true at \( w_0 \) and \( t_0 \).

(ii) ‘\( p \) is true’ gets \( t_M \)-value 1 at \( <w_0, t_0, A, S_D> \) iff ‘\( p \) is descending true’ is ascending true at \( w_0 \) and \( t_0 \).

(iii) ‘\( p \) is true’ gets \( t_M \)-value 1 at \( <w_0, t_0, D, S_A> \) iff ‘\( p \) is ascending true’ is descending true at \( w_0 \) and \( t_0 \).

(iv) ‘\( p \) is true’ gets \( t_M \)-value 1 at \( <w_0, t_0, D, S_D> \) iff ‘\( p \) is descending true’ is descending true at \( w_0 \) and \( t_0 \).

The third slot is the aletheic value parameter; it has nothing to do with semantic relativism and is present because we have replaced the concept of truth with the concepts of ascending truth and descending truth in the semantics and postsemantics: ‘\( A \)’ means that the semantics is specifying the ascending truth value of the proposition in question, and ‘\( D \)’ means that the semantics is specifying the descending truth value of the proposition in question. The fourth slot is the aletheic standard parameter; it is present because ‘true’ is assessment sensitive: ‘\( S_A \)’ means that the semantics treats ‘true’ in the sentence ‘\( p \) is true’ as if it were ‘ascending true’, and ‘\( S_D \)’ means that the semantics treats ‘true’ in the sentence ‘\( p \) is true’ as if it were ‘descending true’. The biconditionals (i) – (iv) display the part of the t-distribution for ‘\( p \) is true’ at the particular world and time in question. In what follows, I use ‘\( v \)’ as an aletheic value variable and ‘\( s \)’ as an aletheic standard variable.

An assessment-sensitive theory of truth also needs a postsemantics that takes t-distributions as input and outputs both ascending truth value in a context of use from a context of assessment and descending truth value in a context of use from a context of assessment. Here is a suggestion for that kind of postsemantic theory (letting \( u \) be a context of use, \( a \) be a context of assessment, \( i_u \) be the index representing \( u \), and \( i_a \) be the index representing \( a \)):

(9) A sentence \( p \) containing ‘true’ is ascending true in \( u \) from a \( a \) iff the content assigned to the clause representing \( p \) with respect to \( i_u \) gets \( t_M \)-value 1 at the point of evaluation \( <w, t, v, s> \), where \( w \) and \( t \) are the world and time of \( i_u \), \( v \) is the ascending aletheic value parameter, and \( s \) is the aletheic standard from \( i_a \).

(10) A sentence \( p \) containing ‘true’ is descending true in \( u \) from a \( a \) iff the content assigned to the clause representing \( p \) with respect to \( i_u \) gets
Notice that even though there are alethic value slots and alethic standards slots in the points of evaluation, they do not contribute to the content of the sentence in the context of utterance. Instead, the alethic value slot determines which kind of truth conditions are being given (ascending or descending) for the sentence in question, and the alethic standard slot determines the reading of the truth predicate in p and is picked up from the context of assessment. In short, the postsemantics has two inputs—the t-distribution from the semantics and the index from the presemantics—and two outputs—the ascending truth value of the sentence at the context of use from the context of assessment and the descending truth value of the sentence at the context of use from the context of assessment. The postsemantics focuses on two points of evaluation from the t-distribution: (i) the world of the context of use, the time of the context of use, the ascending aletheic value, and the aletheic standard from the context of assessment, and (ii) the world of the context of use, the time of the context of use, the descending aletheic value, and the aletheic standard from the context of assessment. The former determines the ascending truth value of the sentence at the context of use from the context of assessment, and the latter determines the descending truth value of the sentence at the context of use from the context of assessment.

Arguments whose sentences contain ‘true’ are assessed for validity in a natural way—an argument whose premises are the members of the set G and whose conclusion is p is valid iff for every point of evaluation e, if all members of G are assigned t\(_M\)-value 1 at e, then p is assigned t\(_M\)-value 1 at e. Because all the points of evaluation are classical, the resulting logic of the truth predicate is classical as well.

To sum up: the semantics and postsemantics for ‘true’ given here differ from those for a familiar, univocal, invariant predicate in two ways. First, rather than giving us the truth values for sentences containing ‘true’, the theory gives us the ascending truth values and the descending truth values for sentences containing ‘true’. It does this because we do not want the theory to use the inconsistent concept of truth, so it uses the replacement concepts instead. This feature has nothing to do with semantic relativism, and it is implemented by the aletheic value parameter in the points of evaluation (it could have been implemented differently). Second, rather than giving us the ascending truth value of
3.3. Other Options

This subsection is devoted to comparing and contrasting the descriptive theory that takes ‘true’ to be assessment sensitive from the previous subsection with some other options and to giving reasons in favor of the assessment-sensitivity view. I consider the following five options: (i) ‘true’ is univocal, invariant, and determinate, (ii) ‘true’ is referentially indeterminate, (iii) ‘true’ is ambiguous, (iv) ‘true’ is an indexical, and (v) ‘true’ is a nonindexical context-dependent expression.

Option (i): truth is univocal, invariant, and has a determinate extension. Given the central claim of an inconsistency approach to the aletheic paradoxes—that truth is an inconsistent concept—it is rather difficult to see how ‘true’, the predicate of English that expresses it, could be univocal, invariant, and have a determinate extension. What would its extension be? Any answer to this question is bound to be problematic since the reasoning for, say, the liar paradox can be cast as an argument that a liar sentence is in the extension of ‘true’ iff it is not. One could sidestep this problem by arguing that the truth predicate obeys (T-In) but not (T-Out) and so is like what has come to be known as a classical glutty truth predicate, or one could say that it obeys (T-Out) but not (T-In) and so is like what is called a classical gappy truth predicate.\(^{58}\) However, it is difficult to see how one would argue for either one of these views over the other. If both (T-In) and (T-Out) are constitutive of truth, which is a central claim of the inconsistency approach, why would one of them hold and the other not? I do not see much promise for answering this

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\(^{58}\) These terms are from Field 2008; see section 3.8.4 for details. Alternatively, one could argue that either the property of being ascending true or the property of being descending true (but not both) is a reference magnet; see Lewis 1983 [1979], Williams 2007, Hawthorne 2007, Sider 2009, and Chalmers 2012 for discussion of reference magnets. Although I reject the reference magnet view, arguing against it here would take us too far off topic.
question or for an inconsistency view that takes truth to be univocal, invariant, and have a determinate extension.\textsuperscript{59} Instead, it seems to me that a predicate that expresses an inconsistent concept is bound to display some kind of semantic pathology or have some surprising semantic features. In addition, it seems that the replacement concepts, ascending truth and descending truth, should play some role in our understanding of the truth predicate.

Option (ii): ‘true’ is univocal and invariant, but it has a divided (indeterminate) reference. Before Hartry Field’s conversion to deflationism, he defended a particular kind of correspondence theory of truth (Field 1972) and introduced a phenomenon he dubbed “referential indeterminacy” (Field 1973). In fact, the mass example that has guided my discussion of inconsistent concepts is adapted from Field’s treatment. He suggests that ‘mass’ partially denotes relativistic mass and partially denotes proper mass. The semantics he suggests for ‘mass’ relies on two distinct interpretations of the language to which ‘mass’ belongs. One interpretation assigns ‘mass’ to the quantity of relativistic mass, and the other assigns it to the quantity of proper mass. It is straightforward to assign truth values to sentences containing ‘mass’ relative to each interpretation. That is, if we replace ‘mass’ in a sentence with ‘relativistic mass’ and the resulting sentence is true, then the original is true relative to the first interpretation; likewise for ‘proper mass’ and the second interpretation. Field (1973, 477–78) claims that a sentence containing ‘mass’ is determinately true if it is true on both interpretations, determinately false if it is false on both interpretations, and neither determinately true nor determinately false if the interpretations differ.

Field does not say how to define validity for arguments whose sentences contain an expression that is referentially indeterminate, but his method for assigning determinate truth and determinate falsity has come to be known as \textit{supervaluation}, and the most familiar supervaluation consequence relation takes it that an argument whose premises constitute

\textsuperscript{59}. An error theory of truth would also fall into this category—it implies that all atomic sentences with an occurrence of ‘true’ are false. Aside from being exceedingly implausible, the implications of this theory for the validity of arguments whose sentences contain ‘true’ are hard to live with. For example, it implies that any argument whose conclusion is an atomic sentence with ‘true’ is unsound. Moreover, it implies that any argument consisting entirely of atomic sentences with ‘true’ is valid (it is impossible that its premises are true and its conclusion is false). We can do much better than that. See Boghossian 2006 for discussion of error theories for (what I am calling) inconsistent concepts.
a set \( G \) and whose conclusion is a sentence \( p \) is valid iff if all the members of \( G \) are true in each interpretation, then \( p \) is true on each interpretation. Unfortunately, it is well known that if the language in question has a predicate expressing determinate truth (that is, truth in both interpretations in our case), then the logic of this language is not entirely classical. In particular, reasoning by cases, conditional proof, and reductio ad absurdum fail.\(^{60} \) I stated earlier that I take it as a methodological assumption that an inconsistency approach should be compatible with classical logic. Thus, when paired with this version of supervaluationism, the indeterminacy option is unacceptable.

Instead, one might define validity differently (the above definition is often called \textit{global}, and the following is called \textit{local}): the argument with premises \( G \) and conclusion \( p \) is valid iff for each interpretation \( I \), if all the members of \( G \) are true in \( I \), then \( p \) is true in \( I \). This version of supervaluationism has the benefit of being compatible with classical logic. It is also strikingly similar to the assessment-sensitivity theory that is the main focus of this essay. Notice that the liar reasoning is diagnosed as breaking down at the same point on both theories—if \((1)\) is a liar sentence (that is, ‘\((1)\) is not true’), then the instance of \((\text{T-In})\), ‘if \((1)\) is not true, then \((1)\) is true’ is not valid on either the local supervaluation view or the assessment-sensitivity view. Likewise, the instance of \((\text{T-Out})\), ‘if \((1)\) is true, then \((1)\) is not true’, is also not valid on either account. Moreover, on each view, the truth predicate has no determinate extension. However, the local supervaluation view by itself says nothing about the content of the truth predicate in the sense of content given by an intensional semantic theory. Indeed, the local supervaluation view, conceived of as a logic for the truth predicate, is identical to the logic for the truth predicate specified by the assessment-sensitivity view. I am not going to prove this formally since it would require stating both views in considerable formal precision, which would not be worth the effort. Instead, once one recognizes that the aletheic standards in the points of evaluation of the assessment-sensitivity view function in exactly the same way as the interpretations in the local supervaluation view and that the definitions of validity are identical, it should be obvious that the theories are essentially the same. What the assessment-sensitivity view offers in addition to the logic of the truth predicate is an intensional semantics for the truth predicate. The

\(^{60}\) This is a well-known, although not uncontested, result. See Asher, Dever, and Pappas 2009 for details, and see Williams 2008 for an alternative view. In Field 2008, this is called a weakly classical logic.
interpretations used by the local supervaluation view are given empirical significance by the assessment-sensitivity theory as aletheic standards that function in contexts of assessment. Thus, the local supervaluation view and the assessment-sensitivity view are not competitors. One can think of local supervaluationism as the logical core of the assessment-sensitivity theory of truth.⁶¹

Option (iii): ‘true’ is ambiguous. ‘True’ sometimes means *ascending true* and sometimes means *descending true*. There are many ambiguous expressions in English (‘bank’ is a common example), and they are usually treated as having two or more distinct meanings. When an ambiguous word is used in a conversation, the participants must disambiguate it—determine which meaning the speaker intended it to have. The intended meaning is usually obvious, and we disambiguate words frequently without even noticing it by using contextual cues. In more technical terms, the semantics has two predicates that we might label ‘true₁’ and ‘true₂’, which are treated as totally distinct. They are assigned different characters, they have different contents, and they make different contributions to the propositions expressed by sentences in which they occur. The presemantic theory has to disambiguate ‘true’ based on the context of utterance so as to select either ‘true₁’ or ‘true₂’ as the clause that represents it. One of these is assigned the same character as ‘ascending true’ and the other is assigned the same character as ‘descending true’.

There are several serious problems with the ambiguity option. First, linguists have compiled several tests for ambiguity, and ‘true’ fails all of them.⁶² For example, I cannot imagine a situation in which it would be felicitous to utter ‘p is true, but p is not true’, which is evidence against ‘true’ being ambiguous.⁶³ I am not going to go through all these tests—interested readers can investigate for themselves—mostly because there are, to my mind, more serious problems with this kind of theory. Second, many users of ‘true’ have no idea that it expresses an inconsistent concept, and the vast majority of them have never heard of ascending truth or descending truth, so it is pretty implausible to suggest that a speaker using ‘true’ has to intend that it means either *ascending true* or *descending true*.

⁶¹. There is much more that could be said about the relation between the two theories, but space does not permit a detailed discussion. See Kremer and Kremer 2003; Varzi 2007; Williams 2008; Cobreros 2011a, 2011b; and Fara 2011 for more on supervaluationism.


⁶³. Obviously this test presupposes that dialetheism is unacceptable.
Remember, the theory we select for ‘true’ should work for people who are totally unfamiliar with the liar paradox and any other reason for thinking that there is a problem with truth. A defender of the ambiguity view might suggest that something other than the speaker’s intuitions determines which meaning gets attached to ‘true’. I think that suggestion is implausible, but it incurs a further problem that I present in the next subsection; roughly, the context of utterance need not have enough information to disambiguate ‘true’.

Option (iv): contextualism about ‘true’. The idea here is that ‘true’ is univocal, the presemantics assigns a single clause to represent ‘true’, and the semantics assigns a single character to this clause. However, the character takes input from the index that represents the context of the conversation in question. The content of ‘true’ as used in a particular context is either ascending true or descending true. The important feature of this view is that the context of use determines whether ‘true’ has the content of ‘ascending true’ or the content of ‘descending true’. One problem with the indexicalist option is that users of ‘true’ might not be familiar with ascending truth or descending truth and so might not do what is required for the context of utterance to determine that ‘true’ ends up with one of these contents. It is not even clear how the context of utterance would determine which content ‘true’ would get. Even if there is some intuitive way of letting the context determine its content, there is another problem with this view, which is the topic of the next subsection; roughly, the context of utterance need not have enough information to determine a content for ‘true’.

Option (v): nonindexical contextualism about ‘true’. This is a more contentious view, and some theorists doubt that it is even coherent because it requires denying that the content of an expression determines its extension. In the case of truth, the view treats ‘true’ as univocal and invariant—‘true’ gets assigned a single clause by the presemantics, and this clause disregards the index; so ‘true’ gets the same content regardless of the context of use. A nonindexical contextualist view requires an extra parameter in the points of evaluation for a judge or for standards. This sort of parameter makes sense in cases like predicates of personal taste (for example, ‘fun’) or epistemic modals (for example, ‘might’). Usually, the judge or standard, in addition to any other relevant parameters (for example, worlds or times), together with the proposition expressed by the sentence in a context of use, determines the truth value of the sentence uttered in the context of use. The idea is that an object satisfies the
predicate only if it meets the standard or the judge would say that it does.64

Because we have replaced truth with ascending truth and descending truth for the purpose of doing semantics, we altered the semantic theory to have an aletheic value parameter, and we altered the post-semantics to output the ascending truth value and the descending truth value of the sentence uttered in a context of use. Because of this change, we have two choices for the nonindexical contextualist theory. The first version adds an aletheic standard parameter to the points of evaluation and has the context of utterance determine the aletheic standard (either ascending or descending), which gives a reading to the sentence in question just as it does in the assessment-sensitivity option. The post-semantics is still conventional (that is, it outputs ascending truth value in a context of use and descending truth value in a context of use) and would look something like (again, letting u be a context of use, a be a context of assessment, \(i_u\) be the index representing u, and \(i_a\) be the index representing a):

\[
(11) \text{A sentence } p \text{ is ascending true at } u \text{ iff the content assigned to the clause representing } p \text{ with respect to } i_u \text{ gets tff-value } 1 \text{ at the point of evaluation } <w, t, v, s>, \text{ where } w, t, \text{ and } s \text{ are the world, the time, and the aletheic standard of } i_u, \text{ and } v \text{ is the ascending aletheic value parameter.}
\]

\[
(12) \text{A sentence } p \text{ is descending true at } u \text{ iff the content assigned to the clause representing } p \text{ with respect to } i_u \text{ gets tff-value } 1 \text{ at the point of evaluation } <w, t, v, s>, \text{ where } w, t, \text{ and } s \text{ are the world, the time, and the aletheic standard of } i_u, \text{ and } v \text{ is the descending aletheic value parameter.}
\]

This version of nonindexical contextualism about truth seems to me to fall prey to a simple objection: those using ‘true’ might not know that it expresses an inconsistent concept and so might not have any idea that the context of utterance is supposed to determine an aletheic standard. Moreover, they might not have even heard of ascending truth or descending truth and so would have no idea what an aletheic standard is. So it is hard to see how a context of utterance could contribute an aletheic standard that would be used by the postsemantic theory.

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64. Anil Gupta seems to advocate something like this for inconsistent concepts; see Gupta 1999.
Instead of this version of nonindexical contextualism, there is another that does not have the same problem. It does not rely on the context of utterance to supply an aletheic standard, and it is only possible because we have replaced truth in our theory with ascending truth and descending truth. The key is to let the aletheic value parameter (which is already present in the points of evaluation because we have replaced truth with ascending truth and descending truth) do duty as an aletheic standard parameter. The points of evaluation have worlds, times, and alethic values—so we have only three slots. The postsemantic theory looks like this:

(13) A sentence \( \text{p} \) is *ascending true* at \( u \) iff the content assigned to the clause representing \( \text{p} \) with respect to \( i_u \) gets \( t_M \)-value 1 at the point of evaluation \( <w, t, v> \), where \( w \) and \( t \) are the world and the time of \( i_u \), \( v \) is the *ascending* aletheic value parameter.

(14) A sentence \( \text{p} \) is *descending true* at \( u \) iff the content assigned to the clause representing \( \text{p} \) with respect to \( i_u \) gets \( t_M \)-value 1 at the point of evaluation \( <w, t, v> \), where \( w \) and \( t \) are the world and the time of \( i_u \), \( v \) is the *descending* aletheic value parameter.

The \( t_M \)-value assignments are determined in the following way:

(i) ‘\( \text{p} \) is true’ gets \( t_M \)-value 1 at \( <w_0, t_0, A> \) iff ‘\( \text{p} \) is ascending true’ is ascending true at \( w_0 \) and \( t_0 \).

(ii) ‘\( \text{p} \) is true’ gets \( t_M \)-value 1 at \( <w_0, t_0, D> \) iff ‘\( \text{p} \) is descending true’ is descending true at \( w_0 \) and \( t_0 \).

Notice that this postsemantics does *not* take the aletheic standard to be given by the context of use. Instead, the ascending truth conditions are given by considering a point of evaluation that has the ascending value, where the sentence in question is read by the ascending standard, while the descending truth conditions are given by considering the point of evaluation that has the descending value, where the sentence is read by the descending standard. That is a big difference between this version of nonindexical contextualism and the previous one. Note that this would not work in general for other inconsistent concepts since the postsemantic theory would not be formulated in terms of them. Nevertheless, it offers a very pretty theory of our inconsistent concept of truth without resorting to a radical kind of relativism (that is, assessment-sensitivity). Below, I explain why I prefer the assessment-sensitivity theory over this one; roughly, this theory classifies liar sentences and truth-teller sentences alike, but the assessment-sensitivity view distinguishes between them.
3.4. The Content Determination Condition

Two of the alternative theories from the last section—the ambiguity theory (iii) and the indexical theory (iv)—share a common problem: they imply that when someone utters a sentence with an occurrence of ‘true’, the context of utterance determines in part the content expressed by ‘true’ in the sentence uttered. However, because of the way truth predicates are used, there will be many situations where the content of ‘true’ (according to one of these theories) is simply not determined by the information in the context of utterance.

To develop this objection, let us be a bit more precise about the context of utterance by using Robert Stalnaker’s theory of discourse, which focuses on assertion and presupposition. The main idea is that when a speaker makes an assertion in a conversation, the content of the sentence asserted furthers the conversation in a certain way. In particular, the content rules out ways the world might be that were previously live options in the conversation. If the content asserted is accepted by everyone in the conversation, then the potential ways the world might be have been narrowed, and that is one of the central goals of conversation (see Stalnaker 1970, 1974, 1978, 1998, 1999).

To model this idea, assume that we have a conversation consisting of several people. Each person has many beliefs. Stalnaker defines a participant’s presupposition as a purportedly shared belief in the conversation. It requires that the participant believes it, the participant believes that everyone else believes it, the participant believes that everyone else believes that everyone else believes it, and so on. Since beliefs are often taken to be attitudes toward propositions, and propositions are often taken to determine a set of possible worlds in which they are true, we can simplify matters by talking about propositions. A participant’s presupposition will divide the class of possible worlds into two—those in which the presupposed proposition is true, and the rest. If a participant’s presupposition is also a presupposition of all the other participants, then it is a shared presupposition. The set of shared presuppositions is called the common ground—it is what everyone in the conversation agrees on, agrees they agree on, and so on. The crucial notion for Stalnaker’s view is the set of possible worlds in which all the propositions in the common ground are true; call this the context set. As the conversation develops, the common ground expands and the context set shrinks. When a participant in the conversation makes an assertion, the proposition asserted should not be entailed by the common ground; that is, it should be false in some
worlds in the context set prior to the assertion.\textsuperscript{65} That way, if everyone in the conversation accepts the assertion, it narrows the context set. Stalnaker’s model of conversation has been extremely influential and offers a powerful explanation for a variety of pragmatic phenomena.

In the following passage, Stalnaker (1999, 6) appeals to his views on conversational contexts to formulate a condition on content determination:

It is a substantive claim that the information relevant to determining the content of context-dependent speech acts is presumed to be available to the participants of a conversation—that it is included in the presuppositions of the context—but it is a claim that is motivated by natural assumptions about the kind of action one performs in speaking. It is not unreasonable to suppose that speakers, in speaking, are normally aiming to communicate—at least to have the addressees understand what is being said. Succeeding in this aim requires that the information relevant to determining content be available to the addressee.\textsuperscript{66}

Here Stalnaker claims that the information needed to determine the content of an expression (together with the character assigned to it) is part of the common ground.\textsuperscript{67} I agree with this condition, at least insofar as natural language expressions go (one could always make up an expression that violates it, but it is hard to see how such an expression would end up being used by people in actual conversations). However, in order to generate the objection we can be more liberal on the basis for determining the content of expressions—we can say that the information needed to determine content is either part of the common ground or could easily be added to the common ground by, say, querying the participants in the conversation. Moreover, it seems to me that this condition holds not only for indexicals but for ambiguous expressions as well. I refer to it as the \textit{Content Determination Condition}.

Consider the Content Determination Condition in light of the example from section 2.6:

\textsuperscript{65} Obviously, this feature of Stalnaker’s model is an idealization since it would rule out asserting necessary propositions (for example, in mathematical conversations).

\textsuperscript{66} See also Roberts 2012 [1996], 2010, where she defends the availability thesis: “In order for an utterance to be rationally cooperative in a discourse interaction D, it must be reasonable for the speaker to expect that the addressee can grasp the speaker’s intended meaning in so-uttering in D.”

\textsuperscript{67} Since speakers are capable of uttering whatever they want, we should think of this condition as applying only to felicitous utterances—that is, those that are in accord with the norms of communication.
Imagine that Cletus asserts (E) in a conversational context with Brandine as his audience because he has it on good authority that all the sentences in question are indeed not true. Assume as well that neither Cletus nor Brandine have access to the relevant section of this essay. It is easy to imagine that Cletus’s utterance is felicitous (indeed, we frequently use ‘true’ and ‘false’ in situations like this). If, say, option (iv) on which ‘true’ is an indexical is correct, then (E) as uttered by Cletus expresses either the proposition that every complete sentence in section 2.6 of Scharp’s “Truth, the Liar, and Relativism” whose first letter is an ‘E’ is not descending true or the proposition that every complete sentence in section 2.6 of Scharp’s “Truth, the Liar, and Relativism” whose first letter is an ‘E’ is not ascending true. Which is it? Since (E) is among the sentences in question, it turns out that not all of them are not ascending true—(E) in particular is ascending true and not descending true (that is, it is unsafe). However, this information is not in the context of utterance. To use Stalnaker’s terminology, the common ground does not include the information about whether the sentences in question are unsafe, nor could this information be ascertained by querying the participants in the conversation. Thus, the conversational context does not determine which proposition (E) expresses; that result would indicate that Cletus’s utterance is infelicitous. So, given the Content Determination Condition and empirical unsafety, option (iv) gives us the false prediction that Cletus’s utterance is infelicitous. It is easy to see that the same results hold for the ambiguity theory (option (iii)) as well.

We should not pick a theory of truth, or any theory for that matter, according to which content-determining information can outrun what is available in a context of use. In other words, an adequate theory of truth ought to treat the inconsistency in our concept of truth as a postsemantic phenomenon; nonindexical contextualism (version two) and assessment-sensitivity are the only ones that comply.

3.5. An Example

To illustrate the two options still on the table, I present a toy language with a presemantic theory, the two semantic theories (that is, one with

68. The only exception I could imagine would be an indexical relativist view on which the context of assessment has a content-determining role; see Weatherson 2009.
<w, t, v> points of evaluation and one with <w, t, v, s> points of evaluation), and the two postsemantic theories (that is, one with ‘x is ascending true in context c’ and ‘x is descending true in context c’, and one with ‘x is ascending true in context of use u from context of assessment a’ and ‘x is descending true in context of use u from context of assessment a’).

3.5.1. Syntax for L
Our language L has several kinds of basic expressions:

(i) **Individual constants:** ‘I’, ‘Clancy’, ‘insanity pepper’, ‘space coyote’, ‘the sentence’.
(ii) **One-place predicates:** ‘cook’, ‘true’.
(iii) **Logical connectives:** ‘¬’, ‘∧’, ‘∨’, ‘→’.
(iv) **Operators:** ‘now’, ‘possibly’.

The following are the formation rules for L’s syntax:

(i) If α is an individual constant, and γ is a one-place predicate, then ‘γ(α)’ is a sentence.
(ii) If φ and ψ are sentences, then ‘¬φ’, ‘φ ∧ ψ’, ‘φ ∨ ψ’, and ‘φ → ψ’ are sentences.
(iii) If φ is a sentence, then ‘now φ’ and ‘possibly φ’ are sentences.

3.5.2. Semantics for L
A **frame** of L is a seven-tuple \( F = \langle I, D, W, T, S, V, \mathcal{J} \rangle \) such that:

(i) I is a nonempty set of indexes where for all \( i \in I \), \( i = <w, t, d, s, o> \), where \( w \in W \), \( t \in T \), \( d \in D \), \( s \in S \), and \( o \in D \) (that is, \( i \) is a world/time/speaker/aletheic standard/object five-tuple).69
(ii) D is a nonempty set (that is, the domain), which includes every sentence of L.
(iii) W is a nonempty set (that is, the worlds).
(iv) T is the set of real numbers (that is, the times).
(v) \( S = \{S_A, S_D\} \), where \( S_A \) is the ascending aletheic standard, and \( S_D \) is the descending aletheic standard.
(vi) \( V = \{A, D\} \), where A is the ascending aletheic value, and D is the descending aletheic value.
(vii) \( \mathcal{J} \) is a function that assigns an intension to each individual constant and predicate other than ‘I’ and ‘the sentence’ (defined below).

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69. Remember, an index has information about a context of utterance and a context of assessment; it is distinct from the points of evaluation.
Define the following functions on indexes:

(i) \( W(<w, t, d, s, o>) = w \) (that is, the world of the index).
(ii) \( T(<w, t, d, s, o>) = t \) (that is, the time of the index).
(iii) \( A(<w, t, d, s, o>) = d \) (that is, the agent of the index).
(iv) \( S(<w, t, d, s, o>) = s \) (that is, the aletheic standard of the index).
(v) \( O(<w, t, d, s, o>) = o \) (that is, the salient object of the index).

If \( \alpha \) is an individual constant of \( L \) other than ‘I’ or ‘the sentence’ or a predicate of \( L \), then \( \mathcal{I} \) assigns to \( \alpha \) an intension \( \mathcal{I}_\alpha \) in the following way:

(i) If \( \alpha \) is an individual constant other than ‘I’ or ‘the sentence’, then \( \mathcal{I}_\alpha \) is a function from \( W \times T \times V \times S \) to \( D \) such that for all \( v, v' \in V \) and \( s, s' \in S \), \( \mathcal{I}_\alpha(w, t, v, s) = \mathcal{I}_\alpha(w, t, v', s') \); that is, the individual constants other than ‘I’ and ‘the sentence’ are assigned a member of the domain for each \( < \text{world}, \text{time}, \text{aletheic value}, \text{aletheic standard}> \) quadruple, and the function is invariant across aletheic standards and aletheic values.

(ii) If \( \alpha = \text{‘cook’} \), then \( \mathcal{I}_\alpha \) is a function from \( W \times T \times V \times S \) to a \( 2^D \) such that for all \( v, v' \in V \) and \( s, s' \in S \), \( \mathcal{I}_\alpha(w, t, v, s) = \mathcal{I}_\alpha(w, t, v', s') \); that is, ‘cook’ is assigned a subset of the domain for each \( < \text{world}, \text{time}, \text{aletheic value}, \text{aletheic standard}> \) quadruple that is invariant across aletheic standards and aletheic values.

(iii) If \( \alpha = \text{‘true’} \), then \( \mathcal{I}_\alpha \) is a function from \( W \times T \times V \times S \) to a \( 2^D \); that is, ‘true’ is assigned a subset of the domain for each \( < \text{world}, \text{time}, \text{aletheic value}, \text{aletheic standard}> \) quadruple.

If \( \alpha \) is an individual constant or predicate, then the extension of \( \alpha \) for frame \( \mathfrak{G} \), index \( i \), world \( w \), time \( t \), aletheic value \( v \), and aletheic standard \( s \) (written as ‘[[\alpha]]_\mathfrak{G}, i, w, t, v, s’) is defined in the following way:

(i) If \( \alpha \) is a predicate or an individual constant other than ‘I’ or the sentence’, then \( [[\alpha]]_\mathfrak{G}, i, w, t, v, s = \mathcal{I}_\alpha(w, t, v, s) \).

(ii) \( [[[I]]]_\mathfrak{G}, i, w, t, v, s = A(i) \)

(iii) \( [[[\text{the sentence}]]]_\mathfrak{G}, i, w, t, v, s = O(i) \)

Define the following extensions for sentences (for frame \( \mathfrak{G} \), index \( i \), world \( w \), time \( t \), aletheic value \( v \), and aletheic standard \( s \)), where \( \alpha \) is a constant, \( \gamma \) is a one-place predicate, and \( \phi \) and \( \psi \) are sentences:

(i) \( [[\gamma(\alpha)]]_\mathfrak{G}, i, w, t, v, s = 1 \) iff \( [[\gamma]]_\mathfrak{G}, i, w, t, v, s = 1 \)

(ii) \( [[\neg \phi]]_\mathfrak{G}, i, w, t, v, s = 1 \) iff \( [[\phi]]_\mathfrak{G}, i, w, t, v, s = 0 \)

(iii) \( [[\phi \land \psi]]_\mathfrak{G}, i, w, t, v, s = 1 \) iff \( [[\phi]]_\mathfrak{G}, i, w, t, v, s = 1 \) and \( [[\psi]]_\mathfrak{G}, i, w, t, v, s = 1 \)

(iv) \( [[\phi \lor \psi]]_\mathfrak{G}, i, w, t, v, s = 1 \) iff \( [[\phi]]_\mathfrak{G}, i, w, t, v, s = 1 \) or \( [[\psi]]_\mathfrak{G}, i, w, t, v, s = 1 \)

(v) \( [[\phi \rightarrow \psi]]_\mathfrak{G}, i, w, t, v, s = 1 \) iff \( [[\phi]]_\mathfrak{G}, i, w, t, v, s = 1 \), then \( [[\psi]]_\mathfrak{G}, i, w, t, v, s = 1 \).
(vi) \[[\text{Now } \phi]\]_{\mathcal{F}, i, w, t, v, s} = 1 \text{ iff } \[[\phi]\]_{\mathcal{F}, i, w, t, v, s} = 1

(vii) \[[\text{Possibly } \phi]\]_{\mathcal{F}, i, w, t, v, s} = 1 \text{ iff for some } w' \ [\[[\phi]\]_{\mathcal{F}, i, w', t, v, s} = 1

Now to define the contents for each sentence, constant, or predicate \(\xi\):

(i) \(\{\xi\}_{\mathcal{F}, i} = \text{the function from } <w, t, v, s> \text{ to } [\{\xi\}]_{\mathcal{F}, i, w, t, v, s}\).

Contents are functions from points of evaluation to extensions; in the case of sentences, extensions are t\mathcal{M}-values.

The above definition of a frame says little about how ‘true’ works other than that its t\mathcal{M}-value might depend on the aletheic value parameter and the aletheic standard parameter—it says nothing about how these parameters function. It will be instructive to consider a particular class of frames that model an example conversation and a particular world and range of times in which the conversation takes place. In this class of frames, the domain includes an insanity pepper, a space coyote, Clancy, and of course all the sentences of L. Every frame in the class has an intension function that assigns (for the world and times in question) the following extensions: Clancy to ‘Clancy’, the insanity pepper to ‘insanity pepper’, the space coyote to ‘space coyote’, and all and only the cooks in the domain to ‘cook’.

In this class of frames, at the world and times in question, the intension of ‘true’ is a function that behaves in the following way. For sentences that do not contain ‘true’, the aletheic standard parameter and aletheic value parameter have no effect. For sentences of L that contain ‘true’, the ascending aletheic standard treats ‘true’ as an ascending truth predicate and the descending standard treats ‘true’ as a descending truth predicate. So it seems like a simple substitution would do the trick. However, because some sentences attribute truth to other sentences that themselves contain truth predicates, we need to be a bit more global in our approach. Let L' be the language that results from substituting ‘ascending true’ for ‘true’ in each sentence of L, and let L'' be the language that results from substituting ‘descending true’ for ‘true’ in each sentence of L. For each sentence \(\phi\) of L, there is a corresponding sentence \(\phi'\) of L' and a sentence \(\phi''\) of L''. If \(\phi\) does not contain a truth predicate, then \(\phi = \phi' = \phi''\). Now, the ascending standard treats the proposition in question, \(\{\phi\}_{\mathcal{F}, i}\), as if it were \(\{\phi'\}_{\mathcal{F}, i}\), the proposition expressed by the corresponding sentence of L', and the descending standard treats \(\{\phi\}_{\mathcal{F}, i}\), as if it were \(\{\phi''\}_{\mathcal{F}, i}\), the proposition expressed by the corresponding sentence of L''. In addition, the intension function for ‘true’ in the class of frames in question might assign different t\mathcal{M}-values to a
sentence at points of evaluation with different aletheic value parameters. At points with the ascending aletheic value, a sentence \( \phi \) of \( L \) is assigned \( tM \)-value 1 iff the corresponding sentence (that is, \( \phi^\prime \), or \( \phi'' \)) is ascending true at the world and time in question, and at points with the descending aletheic value, \( \phi \) is assigned \( tM \)-value 1 iff the corresponding sentence is descending true at the world and time in question. In sum, the intension function for ‘true’ in the class of frames in question obeys the following constraints:

(i) \( \phi \) gets \( tM \)-value 1 at world \( w \), time \( t \), aletheic value \( A \), and aletheic standard \( S_A \) iff \( \phi^\prime \) is ascending true at \( w \) and \( t \).
(ii) \( \phi \) gets \( tM \)-value 1 at world \( w \), time \( t \), aletheic value \( A \), and aletheic standard \( S_D \) iff \( \phi'' \) is ascending true at \( w \) and \( t \).
(iii) \( \phi \) gets \( tM \)-value 1 at world \( w \), time \( t \), aletheic value \( D \), and aletheic standard \( S_A \) iff \( \phi^\prime \) is descending true at \( w \) and \( t \).
(iv) \( \phi \) gets \( tM \)-value 1 at world \( w \), time \( t \), aletheic value \( D \), and aletheic standard \( S_D \) iff \( \phi'' \) is descending true at \( w \) and \( t \).

Thus, even though ‘ascending true’ and ‘descending true’ are not part of \( L \), they show up in the semantics to handle the aletheic standards and the aletheic values.

3.5.3. Presemantics and Postsemantics for \( L \)
Now that we have our general semantic theory and our particular class of frames, imagine that Ned and Clancy are having a conversation in English; in their immediate vicinity is a blackboard they can write on. Assume that Clancy is a cook and that Ned is not a cook throughout their conversation.

*The Assessment-Sensitivity Option:* At a certain point in their conversation Clancy asserts ‘I am a cook’. The presemantic theory selects the sentence of \( L \), ‘\( \text{cook}(I) \)’, to represent Clancy’s sentence and an index \( <w, t, d, s, o> \) to represent the context of Clancy’s utterance (\( w \) is the world, \( t \) is the time, \( d \) is the agent, \( s \) is the aletheic standard, and \( o \) is the salient object— which will be handy when they start talking about the sentence on the blackboard). Note that the aletheic standard is picked up from the context of assessment, not the context of utterance, but for ease of exposition, there is just one index that has information from the context of utterance and the context of assessment. Since Clancy’s sentence does not have a truth predicate, the aletheic standard plays no role at all, and since his sentence is safe, its ascending truth value and descending truth...
value are the same. Thus, the semantic theory above assigns 1 to the clause relative to the index and all the world/time/aletheic value/aletheic standard quadruples where Clancy is a cook, and 0 otherwise.

The following is our postsemantic theory:

(15) A sentence \( p \) is \textit{ascending true} in \( u \) from \( a \) iff the content assigned to the clause representing \( p \) with respect to \( i_u \) gets \( \mathcal{T}_M \)-value 1 at the point of evaluation \( <w, t, v, s> \), where \( w \) and \( t \) are the world and time of \( i_u \), \( v \) is the \textit{ascending} value, and \( s \) is the aletheic standard from \( i_a \).

(16) A sentence \( p \) is \textit{descending true} in \( u \) from \( a \) iff the content assigned to the clause representing \( p \) with respect to \( i_u \) gets \( \mathcal{T}_M \)-value 1 at the point of evaluation \( <w, t, v, s> \), where \( w \) and \( t \) are the world and time of \( i_u \), \( v \) is the \textit{descending} value, and \( s \) is the aletheic standard from \( i_a \).

Our postsemantics will interpret 1 as being true in the model and 0 as false in the model. Our postsemantics implies that Clancy’s sentence ‘I am a cook’ is ascending true in the context of use iff Clancy is a cook; it implies that Clancy’s sentence ‘I am a cook’ is descending true in the context of use iff Clancy is a cook.\(^{70}\)

At another point in their conversation, Clancy writes ‘Clancy is a cook’ on the blackboard and utters ‘the sentence is true’. The presemantic theory selects ‘true(the sentence)’ to represent Clancy’s sentence and an index to represent the context of use. The index, however, also picks up the aletheic standard from the context of assessment, so let us stipulate that the context of assessment is the same as the context of utterance and that Clancy decides on the ascending standard (we will consider the other choice in a moment). In L, ‘the sentence’ acts like an indexical, and it picks out whatever object is salient in the context—here, it is the sentence written on the blackboard.\(^{71}\) I stipulated that every sentence of L is in the domain, so there is no problem picking out ‘Clancy is a cook’. The clause representing Clancy’s sentence ‘true(the sentence)’ is assigned a proposition, which is then assigned \( \mathcal{T}_M \)-values at each point of evaluation. The

\(^{70}\) Since ‘Clancy is a cook’ has no assessment-sensitive vocabulary, the postsemantics does not need to consider contexts of assessment at all. Alternatively, we could say that ‘I am a cook’ is ascending true in the context of use from any context of assessment iff Clancy is a cook and that ‘I am a cook’ is descending true in the context of use from any context of assessment iff Clancy is a cook.

\(^{71}\) Again, this feature is an easy way to generate self-reference, but it is not a realistic take on the semantics for locutions like ‘the sentence’.
tM-value assigned to it at a point <w, t, v, s>, where s = S_A is the tM-value that would be assigned to the proposition expressed by the corresponding sentence of L’ at w, t, and v: ascending true (the sentence). That is, the points of evaluation with the ascending aletheic standard treat the proposition in question as if Clancy had uttered a sentence containing ‘ascending true’ instead of ‘true’. (Likewise, the points of evaluation with the descending truth standard treat the proposition in question as if Clancy had uttered a sentence containing ‘descending true’ in place of ‘true’. The tM-value assigned to it at a point <w, t, v, s>, where s = S_D is the tM-value that would be assigned to the proposition expressed by the corresponding sentence of L” at w, t, and v. This would be relevant if Clancy had decided on the descending aletheic standard instead.) Since “‘Clancy is a cook’ is ascending true” is descending true (and thus ascending true) at the world and time in question, the semantic theory assigns 1 to the proposition at <w_0, t_0, A, S_A> and at <w_0, t_0, D, S_A>, where w_0 and t_0 are the world and time of the index representing Clancy’s context of use. Thus, the postsemantic theory implies that ‘the sentence is true’ is ascending true in the context of use from the context of assessment and that ‘the sentence is true’ is descending true in the context of use from the context of assessment. Had Clancy chosen the descending standard instead, the results would have been the same. (The reader will no doubt wonder what motivates this choice—I discuss the issue below.)

Later, Ned writes ‘the sentence is not true’ on the blackboard. Although we have been considering utterances as verbal performances, let us be a bit more liberal and treat his inscription as an utterance. The presemantic theory selects ‘~true(the sentence)’ to represent Ned’s sentence, and the o slot in the index that represents his context picks out ‘~true(the sentence)’ (that is, the clause of the sentence written on the blackboard). In other words, Ned uttered a liar sentence. The proposition assigned to the clause is \{~true(the sentence)\}_{S_A, i}; I abbreviate it as ‘\{\phi\}_{S_A, i}'. Imagine that it is being assessed by Clancy, who decides to use the descending alethic standard in his context of assessment.

For points <w, t, A, S_A> it assigns a tM-value based on whether the corresponding proposition \{\phi\}_{S_A, i} is ascending true at w and t, and at points <w, t, D, S_A>, it assigns a tM-value based on whether the cor-

72. ‘Clancy is a cook’ is safe, and we have assumed that Clancy is a cook, so ‘Clancy is a cook’ is descending true (and, of course, ascending true and safe); thus ‘‘Clancy is a cook’ is ascending true’ is descending true (and ascending true).
sponding proposition \( \{ \phi \}'_{i, w, t} \) is descending true at \( w \) and \( t \). For points \(< w, t, A, S_D >\), it assigns a \( t_M \)-value based on whether the corresponding proposition \( \{ \phi \}'_{i, w, t} \) is ascending true at \( w \) and \( t \), and at points \(< w, t, D, S_D >\), it assigns a \( t_M \)-value based on whether the corresponding proposition \( \{ \phi \}'_{i, w, t} \) is descending true at \( w \) and \( t \). Since Clancy chose the descending standard in the context of assessment, we look at \( L'' \), where ‘the sentence’ refers to ‘\( \sim \)descending true (the sentence)’, which is not descending true and is ascending true at \( w \) and \( t \). Hence, \( [[\text{the sentence}]]_{i, w, t, A, S_D} \in [[\text{ascending true}]]_{i, w, t, A, S_D} \) so \( [[\sim \text{descending true (the sentence)}]]_{i, w, t, A, S_D} = 1.73 \). Therefore, \( \{ \phi \}'_{i, w, t, A, S_D} \) gets \( t_M \)-value 1 at \(< w, t, A, S_D >\). Moreover, \( [[\text{the sentence}]]_{i, w, t, D, S_D} \notin [[\text{descending true}]]_{i, w, t, D, S_D} \) so \( [[\sim \text{descending true (the sentence)}]]_{i, w, t, D, S_D} = 0 \). Therefore, \( \{ \phi \}'_{i, w, t, D, S_D} \) gets \( t_M \)-value 0 at \(< w, t, D, S_D >\). Remember, the third slot in the points of evaluation contains the aletheic value parameter, which determines whether the semantics is assessing the reading of the sentence for ascending truth or descending truth, while the fourth slot contains the aletheic standard parameter, which produces a reading of the sentence (it treats ‘true’ in the sentence as either ‘ascending true’ or ‘descending true’).

The postsemantics produces an ascending truth value for the sentence in a context of use from a context of assessment by considering the points of evaluation with the ascending aletheic value parameter, and it produces a descending truth value for the sentence in a context of use from a context of assessment by considering the points of evaluation with the descending aletheic value parameter. In particular, it yields the following results: Ned’s sentence, ‘the sentence is not true’, is ascending true in Ned’s context of use from Clancy’s context of assessment, and the sentence is not descending true in Ned’s context of use from Clancy’s context of assessment. Since Ned uttered a liar sentence, and Clancy’s context of assessment invokes the descending standard, the semantics reads Ned’s sentence as the descending liar. The ascending aletheic value assesses the descending liar for ascending truth—it is ascending true. Then the descending aletheic value assesses the descending liar for descending truth—it is not descending true. Had Clancy invoked the ascending standard instead, the results would have been the same.

73. Here I am writing as if ‘ascending true’ and ‘descending true’ have their own clauses in the semantic theory, which would be required for languages \( L' \) and \( L'' \). Although I have not specified these clauses explicitly, it should be obvious how it would be done.
The Nonindexical Contextualist Option: The major difference in the non-indexical contextualist theory is that there is no aletheic standard slot in the points of evaluation, so they are triples: \( <w, t, v> \). The aletheic value parameter controls the reading of the sentence and whether it is being evaluated for ascending truth or descending truth. The postsemantics outputs the ascending truth value of the sentence in the context of use and the descending truth value of the sentence in the context of use.

The first sentence uttered by Clancy, ‘I am a cook’, is ascending true in the context of use and is descending true in the context of use. The second sentence uttered by Clancy, ‘the sentence is true’, referring to ‘Clancy is a cook’, has the same results. It is the third sentence, ‘the sentence is not true’, that Ned writes on the board, which refers to itself, that we want to investigate. Just as before, the presemantics selects ‘\( \sim \text{true}(\text{the sentence}) \)’ to represent Ned’s sentence, and the o slot in the index that represents his context of utterance picks out ‘\( \sim \text{true}(\text{the sentence}) \)’. The semantic theory assigns a character to the clause for Ned’s sentence, which together with the index, picks out the proposition that ‘\( \sim \text{true}(\text{the sentence}) \)’ is not true; call this \( \{f_i\}_{\overline{\delta}, i} \). This proposition is assigned a \( t_M \)-value at every point. For points \( <w, t, A> \), it assigns a \( t_M \)-value based on whether the corresponding proposition \( \{f'/i\}_{\overline{\delta}, i} \) is ascending true at \( w \) and \( t \), and at points \( <w, t, D> \), it assigns a \( t_M \)-value based on whether the corresponding proposition \( \{f''/i\}_{\overline{\delta}, i} \) is descending true at \( w \) and \( t \). In \( L' \), ‘the sentence’ refers to ‘\( \sim \text{ascending true}(\text{the sentence}) \)’, which is ascending true and not descending true at \( w \) and \( t \). Hence, \( [[\text{the sentence}]]_{\overline{\delta}, i, w, t, v} \in [[\text{ascending true}]]_{\overline{\delta}, i, w, t, v} \) so \( [[\sim \text{ascending true}(\text{the sentence})]]_{\overline{\delta}, i, w, t, v} = 1 \). Therefore, \( \{f\}_{\overline{\delta}, i} \) gets \( t_M \)-value 1 at \( <w, t, A> \). On the other hand, in \( L'' \), ‘the sentence’ refers to ‘\( \sim \text{descending true}(\text{the sentence}) \)’, which is ascending true and not descending true at \( w \) and \( t \). Hence, \( [[\text{the sentence}]]_{\overline{\delta}, i, w, t, v} \notin [[\text{descending true}]]_{\overline{\delta}, i, w, t, v} \) so \( [[\sim \text{descending true}(\text{the sentence})]]_{\overline{\delta}, i, w, t, v} = 0 \). Therefore, \( \{f\}_{\overline{\delta}, i} \) gets \( t_M \)-value 0 at \( <w, t, D> \). The postsemantics yields the following results: Ned’s sentence, ‘the sentence is not true’, is ascending true in his context, and his sentence is not descending true in his context. Since the ascending value parameter reads his sentence as the ascending liar, it treats Ned’s sentence as ascending true in his context. Since the descending value parameter reads his sentence as the descending liar, it treats Ned’s sentence as not descending true in his context. Notice that there are no contexts of assessment, and the reading of the sentence has nothing to do with the context of utterance.
On the nonindexical contextualist option, the reading of Ned’s sentence and the evaluation of that reading are controlled by a single slot, so there are only two options—assessing the ascending liar for ascending truth or assessing the descending liar for descending truth. However, on the assessment-sensitivity option, there are two slots, and hence four options—assessing the ascending liar for ascending truth and for descending truth, and assessing the descending liar for ascending truth and for descending truth.

3.6. Resolving the Paradoxes

I have not said why I prefer the assessment-sensitivity theory over the nonindexical contextualist theory. There are pros and cons of each. The latter is surely simpler (that is, only one extra parameter), and I would prefer it if the former were not more versatile (that is, two degrees of variability). It is not yet clear whether that additional versatility might come in handy. Note that the two approaches say the same thing about the liar reasoning—it is invalid because it uses (T-In) and (T-Out), both of which have exceptions on these approaches. To justify this claim, we need to take a look at validity.

3.6.1. Validity

Earlier, I said that truth-in-a-model is a mathematical concept, not affected by the paradoxes associated with truth, and the standard way of using truth-in-a-model to define validity remains unaffected as well. The definition of validity is:

\[(\text{Valid}) \quad <\Gamma, \phi> \text{ is valid iff for every model } \mathcal{M}, \text{ if all the members of } \Gamma \text{ are true-in-} \mathcal{M}, \text{ then } \phi \text{ is true-in-} \mathcal{M}.\]

For our purposes, a model is a point of evaluation in the structure described in the previous section. Thus, an argument \(<\Gamma, \phi>\) (where \(\phi\) and all the members of \(\Gamma\) are sentences of \(L\)) is valid iff for every point of evaluation \(e\), if for all \(\gamma \in \Gamma, [[\gamma]]_{\mathcal{E}, i, e} = 1\), then \([[\phi]]_{\mathcal{E}, i, e} = 1.\)

Notice that all the inference rules of classical logic are valid according to (Valid) since every point of evaluation is classical. Notice also that some instances of

\[(\text{T-In}) \quad \text{If } \phi, \text{ then } \langle \phi \rangle \text{ is true, and}\]
\[(\text{T-Out}) \quad \text{If } \langle \phi \rangle \text{ is true, then } \phi\]

74. I am assuming a fixed index in this formulation for ease of exposition.
get $\mathfrak{M}$-value 0 at some points of evaluation. For example, instances of (T-In) where $\langle \phi \rangle$ is a liar sentence get $\mathfrak{M}$-value 0 at points of evaluation with the descending standard, and instances of (T-Out) where $\langle \phi \rangle$ is a liar sentence get $\mathfrak{M}$-value 0 at points of evaluation with the ascending standard (in the nonindexical contextualist option, read ‘value’ for ‘standard’ in these claims).

In addition, note that on this inconsistency approach, (T-In) and (T-Out) are constitutive of truth, but they are not ascending true or descending true in general. That is a crucial feature of any inconsistency approach that avoids dialetheism—since the constitutive principles of an inconsistent concept are inconsistent (possibly with respect to some additional assumptions), they cannot all be correct.

3.6.2. The Liar

One point to notice is how these theories deal with paradoxical sentences. For example:

(17) (17) is not true.

A liar argument is below:

1. Assume (17) is true.
2. ‘(17) is not true’ is true [by (T-Sub)].
3. (17) is not true [by (T-Out)].
4. (17) is not true [by reductio].
5. ‘(17) is not true’ is true [by (T-In)].
6. (17) is true [by (T-Sub)].

Our language from the last section, $\mathcal{L}$, cannot express this argument since the only way to refer to its sentences is ‘the sentence’. Still, it would be easy to add ‘(17)’ as a constant, so we could formulate and evaluate this argument (I omit the details).

It is easy to see that the argument is invalid—it fails at two steps. It fails at step 3 because it is not the case that the inference from ‘‘(17) is not true’’ to ‘(17) is not true’ is valid—it fails at points of evaluation with the ascending standard in the assessment-sensitivity view and at points of evaluation with the ascending value on the nonindexical contextualist option. Likewise, the argument fails at step 5 as well, since this step is invalid due to points of evaluation with the descending standard (value).

The other well-known aletheic paradoxes are blocked as well for the same reason—neither (T-In) nor (T-Out) are true (-in-$\mathfrak{M}$) at every
point of evaluation. Since the other two familiar aletheic paradoxes, Curry’s paradox and Yablo’s paradox, both require \((T-\text{In})\) and \((T-\text{Out})\), the arguments in them are invalid according to the postsemantic approaches outlined here.

3.6.3. Truth Tellers
Truth tellers are not paradoxical, but many approaches assign to them the same status as paradoxical sentences (for example, Kripke’s strong Kleene minimal fixed point, and Field’s theory). Other things being equal, it would be good for a theory of truth to treat paradoxical sentences like the liar and merely odd ones like the truth teller differently. Thinking about how truth tellers are handled by the nonindexical contextualist and assessment-sensitivity approaches provides us with additional data that are relevant in deciding between them. The truth teller is:

\[(18) \quad (18) \text{ is true.}\]

Again, \(L\) cannot express this sentence, but it is easy to add ‘\((18)\)’ to \(L\) so that it can (I omit the details).

Nonindexical contextualism has only one slot for the aletheic value, which serves two purposes: a reading of \((18)\) and the entry in the aletheic conditions for \((18)\). According to ADT, the ascending truth teller and the descending truth teller are safe; the descending truth teller is not ascending true, and the ascending truth teller is descending true.\(^{75}\) Thus, the nonindexical contextualist approach has the following consequences for context \(u\): \((18)\) is ascending true in \(u\), and \((18)\) is not descending true in \(u\). That is, it has the same aletheic conditions as the liar.

The assessment-sensitivity view differs on the truth teller. Assessment-sensitivity semantics has two slots—one for aletheic standards, which controls the reading of \((18)\), and the other for aletheic value, which dictates which aletheic condition is relevant. The assessment-sensitivity approach implies that (as used in context \(u\)) \((18)\) is descending true in \(u\) from contexts with the ascending standard, and \((18)\) is not ascending true in \(u\) from contexts with the descending standard. That is significantly different from the status the liar has. Recall that \((17)\) is not descending true in the context of use from contexts with the ascending standard, and \((17)\) is ascending true in the context of use from contexts with the descending standard. Therefore, nonindexical contextualism

\(^{75}\) These results are nontrivial, but I do not have the space to justify them; see Scharp 2011.
cannot distinguish between paradoxical sentences like the liar and merely odd sentences like the truth teller, but the assessment-sensitivity approach can. That is a big point in favor of assessment-sensitivity, and for this reason, I endorse the assessment-sensitivity approach.

3.7. Problems for Semantic Relativism

For those well versed in the literature on semantic relativism, probably very little of the discussion of the descriptive theory of truth has been familiar. The way aletheic standards work in the theory described above differs from the way most standards work in semantic relativist theories, and the arguments given for the theories above differ from the kind of evidence usually marshaled in favor of semantic relativist treatments. In this section, I explain these differences and consider some common objections to semantic relativism.

The literature on semantic relativism is large and growing every week, it seems. Theorists have argued for some form of semantic relativism for many kinds of linguistic expressions, including predicates of personal taste (see Kölbl [2002, 2003]; MacFarlane [2005a, 2007a, 2008, 2011b, forthcoming]; Egan [2010]; Lasersohn [2005, 2008, 2009]; and Einheuser [2008]) and epistemic modals (see Kölbl [2002]; Egan, Hawthorne, and Weatherson [2005]; Egan [2007]; Stephenson [2007]; MacFarlane [2011a, forthcoming]; Einheuser [2008]). Most of the semantic relativists argue that their theories capture the linguistic data better than the alternatives. The linguistic data include: (i) the surface grammar of the expressions in question, (ii) the ways in which speakers take one another to agree on certain points in certain situations and disagree on certain points in other situations, (iii) the circumstances under which agents treat one another as having said the same thing, (iv) the ways in which speakers treat themselves and one another as authoritative on certain issues, and (v) the ways in which speakers retract claims in light of certain challenges. For example, one might think that if one person asserts that stewed rhubarb is tasty and another asserts that it is not, then they disagree, but neither of them is guilty of some cognitive fault or shortcoming. Instead, this might be a case of faultless disagreement. Some nonindexical contextualists and assessment-sensitivity theorists have argued that their views offer the best explanation of faultless disagreement (see Kölbl [2002, 2003]; Lasersohn [2005]; Recanati [2007]; and MacFarlane [2005a, 2007a, forthcoming]). In addition, some assessment-sensitivity theorists argue that their view explains speakers’
tendency to retract previous claims better than nonindexical contextualism; for example, if Millhouse at age ten asserts that Squishees are tasty but then at age twenty denies that they are tasty, he might say that his age-ten utterance was mistaken. It is difficult for nonindexical contextualism to explain this behavior since it entails that the sentence Millhouse uttered at age ten is true in that context of use. However, the assessment-sensitivity theorist can say that the sentence Millhouse uttered at age ten is true in the age-ten context of use from the age-ten context of assessment, but the sentence he uttered at age ten is false in the age-ten context of use from the age-twenty context of assessment.76

In the case of truth, almost all speakers are ignorant of the fact that truth is an inconsistent concept. Thus, speakers use it as if it were consistent; hence the above kinds of linguistic data with respect to truth are not decisive. Since speakers are ignorant of truth’s inconsistency, they are bound to make mistakes with it. We already know that we do not see faultless disagreement or retraction data in the case of truth because speakers are unaware that truth is inconsistent, and hence they are unaware that ‘true’ is assessment sensitive. Remember: it need not be the case that simply possessing an inconsistent concept is enough for its possessor to come to know that it is inconsistent. If words expressing inconsistent concepts are assessment sensitive, then simply being competent with a word is not enough to come to know that it is assessment sensitive.

Notice, however, that I have not argued for an assessment-sensitivity view in the familiar way. Instead, once one accepts an inconsistency approach to the aletheic paradoxes, one must choose presemantic, semantic, and postsemantic theories for truth on the basis of more general principles about language use, like the Content Determination Condition defended above. Indeed, this condition gives us good reason to think that if truth is an inconsistent concept, then only a postsemantic approach to the aletheic paradoxes is acceptable. The reason is that truth is inconsistent by virtue of the empirical context in which it is used—that is, the empirical context in which it is used is one where rational agents reason more or less classically and speak natural languages that have the capacity to represent their own syntax.77 These are contingent features

76. See MacFarlane 2005a, 2007a, forthcoming, for discussion.

77. That is, deviations from classical logic are minor (for example, intuitionistic logic or the logic of relevant implication) compared to what is required to avoid the paradoxes (for example, LP or K3). See Field 2008 for a discussion of the logics used by nonclassical approaches to the paradoxes.
of natural languages, and in these environments, any concept that has
(T-In) and (T-Out) as constitutive principles is inconsistent. Had our
linguistic practices been different, our concept of truth might not have
been inconsistent. Therefore, ‘true’ is assessment sensitive not entirely
because of the ways in which speakers use it. It is assessment sensitive
because of the ways in which speakers use it together with the logical and
syntactic environment in which it is used. Speakers can be, and often are,
ignorant of the fact that this environment is hostile to a concept with
(T-In) and (T-Out) as constitutive principles. Thus, speakers are ignorant
of the fact that ‘true’ is assessment sensitive. Moreover, a view that intro-
duces contexts of assessment is much more suited to a situation where
one group of people with a more advanced conceptual repertoire (for
example, theorists interested in the semantics for natural language who
possess the concepts of ascending and descending truth) are trying to
explain the behavior of another group of people with a less advanced
conceptual repertoire (for example, everyday speakers of English who
use truth but have never heard of ascending truth or descending truth)
because the more advanced concepts play a role only in the contexts of
assessment. With an assessment-sensitivity theory, there is no expectation
that users of the concept of truth have any familiarity with the replace-
ment concepts.

Because of the Content Determination Condition, it is unaccep-
table for us to use a presemantic approach (for example, ‘true’ is ambig-
uous) or a semantic approach (for example, ‘true’ is an indexical)
because these would imply that speakers and hearers are ignorant of
the propositions expressed by sentences containing ‘true’. In other
words, it cannot be that linguistic expressions are ambiguous or indexical
by virtue of the environment in which they are used. However, a linguistic
expression can be assessment sensitive by virtue of the environment in
which it is used if the concept expressed by that expression is inconsistent
in that environment. That, I claim, is exactly the case with truth.

Another major difference between my use of semantic relativism
and the use to which it is more often put is in the standards that serve as
the extra parameter in points of evaluation. The difference is that stan-
dards are usually ways of modifying or narrowing the content of the
expression in question, whereas, in the case of truth, they provide an
alternative reading of the truth predicate. For example, if one takes
‘fun’ to be assessment sensitive or nonindexical contextual, then the
points of evaluation have an extra slot for an enjoyment standard. A
standard of enjoyment often just specifies that in which a particular person
finds enjoyment. The standard of enjoyment does not reinterpret the word ‘fun’; rather, since what is fun seems to be subjective, it provides the extra bit of information that allows one to assign an extension to ‘fun’. On the other hand, in the case of truth, the aletheic standards do not encode what a particular person takes to be true, and the motivation for semantic relativist treatment is not some antecedent intuition that truth is somehow subjective. Instead, there are only two possible aletheic standards, and they reinterpret the word ‘true’ so that the semantic theory can assign it an extension without falling into contradiction—one reads ‘true’ as ‘ascending true’ and the other reads it as ‘descending true’. There is no reason to think that a person will adopt one of these aletheic standards but not the other—the aletheic standards are not personal. Instead, someone who knows that truth predicates are assessment sensitive can switch back and forth between the two in order to get a better grip on the semantic features of some sentence with an occurrence of ‘true’. Unlike standards of enjoyment, which are often thrust upon us by our responses to external stimuli, an aletheic standard is chosen by an interpreter based on whether it makes more sense to consider the truth claim in question as an ascending truth claim or a descending truth claim at that moment.

By treating ‘true’ as assessment sensitive, those of us who both recognize that it expresses an inconsistent concept and possess the proper replacement concepts can interpret people who use ‘true’ in a consistent way—we can understand their assertions, assess their claims, and evaluate their arguments, all without contradicting ourselves, giving up any cherished logical principles, or treating them as if they do not understand the content of ‘true’. In short, the assessment-sensitive theory of truth uses the semantic relativist’s formal machinery but interprets it in a new way that satisfies one demand of an inconsistency approach to the aletheic paradoxes.

A standard criticism of semantic relativism is that contextualism does a better job of explaining the data (see Glanzberg [2007, 2011]; Cappelen [2008]; Cappelen and Hawthorne [2009, 2011a, 2011b]; von Fintel and Gilles [2008]; and Schaffer [2011]). However, this sort of objection has no bite in the case of truth. Very few possessors of the concept of truth are aware that it is an inconsistent concept, and very few users of truth predicates are aware that they are assessment sensitive. As such, very few users of truth predicates treat them as one would treat an

78. This feature is not unprecedented—the supervaluation semantics considered in section 3.3 is similar.
assessment-sensitive expression or as one would treat an indexical. Once one accepts an inconsistency approach to the paradoxes, one has to decide between contextualism and semantic relativism on other considerations. I have argued that contextualism is not a good candidate for ‘true’ because of the combination of empirical unsafety and the Content Determination Condition. Semantic relativism, however, does not run afoul of the Content Determination Condition.

One might, however, worry that the assessment-sensitivity theory does have a similar problem. After all, if truth is assessment sensitive, but very few people know that it is, then very few people will know to adopt aletheic standards in contexts of assessment. How can the assessment-sensitivity theory accurately describe and explain the facts about how truth predicates function in our natural languages when almost no one ever adopts an aletheic standard? Wouldn’t we need to educate all English speakers about truth’s inconsistency and the replacement concepts before the assessment-sensitivity theory could be expected to deliver the right results?

The answers to these questions and the key to replying to this objection come by answering another question: who are the consumers of approaches to the aletheic paradoxes? They are for people who are bothered by the problems posed by the aletheic paradoxes—problems like: (i) we can derive intuitively absurd conclusions from intuitively obvious assumptions via intuitively obvious inferences, and (ii) one arrives at inconsistent results when one tries to use a standard semantic theory to explain semantic features of truth predicates. These are the people to whom I am recommending the assessment-sensitivity theory of truth, and these are the people who, if they want solutions to their problems, will need to get up to speed on the concepts of ascending truth and descending truth so that they can adopt aletheic standards in contexts of assessment. People who are ignorant of the aletheic paradoxes have no need for, or interest in, possessing these concepts or adopting these standards. The theory is for the theorists—those who want to make sense of those who use our inconsistent concept of truth. It is only those who use the theory that adopt aletheic standards and so need to possess the concepts of ascending truth and descending truth. That is exactly the major benefit of the assessment-sensitivity view. On the ambiguity view or the indexical view, speakers choose between ascending true and descending true as the content of ‘true’, which is exceedingly implausible since most speakers do not possess these concepts. On the assessment-sensitivity view, speakers just utter sentences containing ‘true’, and ‘true’ has an
invariant content. Hearers attribute contents to the claims made by
speakers in the same intuitive way. The contexts of assessment and the
alethic standards are for theorists who want to attribute ascending truth
conditions and descending truth conditions to sentences containing
‘true’. There is no reason to think that ordinary speakers or hearers
would have any interest in such a thing. The only people who should
care about ascending truth conditions and descending truth conditions
are those of us who want to solve the problems posed by the aletheic
paradoxes.

Consider another objection: Crispin Wright argues that semantic
relativist postsemantic theories are appropriate only for propositions that
are nonrepresentational because these theories allow for faultless dis-
agreement. For example, an assessment-sensitivity theory of knowledge
would be acceptable, according to Wright, only if there is nothing for
knowledge attributions to represent. Presumably, many of us have the
intuition that at least some knowledge attributions represent certain
mental states of certain people. Thus, Wright’s (2008) point, if correct,
would pose a problem for these accounts of knowledge. Wright’s point,
if it is correct, does not affect the assessment-sensitivity theory of truth
since I do not think there is any property of truth to be represented by our
word ‘true’ and our concept of truth. Instead, there are two properties,
being ascending true and being descending true, and anyone who thinks
that there is a property of being true is confused. Thus, the claim that
‘true’ does not represent something (that is, the property of being true) is
one I endorse. The assessment-sensitivity view of truth does allow for
limited faultless disagreement (in cases where the difference between
ascending truth and descending truth is negligible). Moreover, I have
argued that, together, ascending truth and descending truth can give an
adequate account of the representational aspect of content insofar as
they play an explanatory role in the revised semantic and postsemantic
theories offered above. Thus, Wright’s worry is not a problem for my
proposal.

In sum, the assessment-sensitivity approach is compatible with the
Content Determination Condition and is fit for inclusion in an inconsis-
tency approach to the aletheic paradoxes; with the exception of the
nonindexical contextualist approach, the others studied here are not.
It makes sense to say that a linguistic expression can turn out to be

assessment sensitive by virtue of the way it is used and the environment in which it is used (which might be unknown or un recognized by those who use it), whereas it does not make sense to say this about indexicality or ambiguity. The standard objections to assessment-sensitivity are inapplicable to the case of truth since these objections presuppose that speakers would be aware of the fact that their expressions are assessment sensitive. At some point after the aletheic revolution, when those for whom it is relevant know to distinguish between ascending truth and descending truth, we will have more data on how these people use ‘true’, and we might need to reassess whether the standard objections have any bite.

3.8. Discussion

Now that we have a sketch of the right kind of inconsistency approach, I would like to briefly discuss several issues that naturally arise in connection with this kind of proposal.

3.8.1. Expressive Role

I have already mentioned that we use ‘true’ as a device of endorsement and as a device of rejection. Earlier, I argued that the replacement concepts can serve these roles. Here, I consider the extent to which ‘true’ as described by the assessment-sensitivity theory plays these roles.

According to the inconsistency approach, (T-In) and (T-Out) are constitutive of the concept of truth, which is the reason it is an inconsistent concept. Since (T-In) and (T-Out) explain these expressive roles, the inconsistency approach can make sense of why those who use truth predicates take them to serve these expressive roles. Participants in linguistic practices take (T-In) and (T-Out) to be constitutive of truth, which leads them to think these principles are true, which leads them to use truth predicates as devices of endorsement and as devices of generalization. For example, in a conversation between Sherri and Terri, Sherri asserts ‘Frink’s theory is true’. Both Sherri and Terri take (T-In) and (T-Out) to be constitutive of ‘true’, so they both take Sherri to have committed herself to the claims that constitute Frink’s theory, regardless of the content of those claims or whether Sherri or Terri knows what Frink’s theory says. That is an example of ‘true’ being used as a device of endorsement, and the inconsistency approach explains why people use it that way.

However, according to the assessment-sensitivity theory, (T-In) and (T-Out) have exceptions—there are sentences p such that ‘p is true’ does not follow from p, and there are sentences q that do not follow
from ‘q is true’ (it turns out that exceptions to one will also be exceptions to the other). Thus, if one calls one of these sentences true, then one has not thereby endorsed that sentence. For example, assume that one of the sentences that make up Frink’s theory is an exception (perhaps it is like the example of an empirically paradoxical sentence from section 2.6). Call it ‘p’. When Sherri asserts that Frink’s theory is true, she commits herself to all the sentences of Frink’s theory that are not exceptions, but she does not commit herself to p since p does not follow from ‘p is true’. Even though Sherri and Terri both assume that she has committed herself to p, they are wrong. Thus, the inconsistency approach predicts that people will use truth predicates as devices of endorsement because of its constitutive principles, but assessment-sensitivity theory predicts that there will be some mistakes about these uses since users do not realize that these constitutive principles are inconsistent (given the existence of paradoxical sentences).

Why is this not just as bad as traditional approaches that deny (T-In) or (T-Out)? Easy—these approaches presuppose that truth is a consistent concept, and as descriptive theories, they make certain predictions about how speakers should use ‘true’; but if we find that speakers do not use ‘true’ in this way, it is difficult to explain away the discrepancy by saying that speakers are just making mistakes. On the other hand, if truth is an inconsistent concept, then one should expect to find those who are unaware of this fact make some mistakes when using it. What kind of mistakes? I have argued that it is wrong to see them as making mistakes about the content of ‘true’ — ‘true’ has exactly the constitutive principles it seems to have. Instead, their mistake is using a concept that, unbeknownst to them, is inconsistent. The assessment-sensitivity approach does not predict that people will use ‘true’ in accordance with the semantics given above. Instead, it entails that those who know that truth is an inconsistent concept should use it that way, and it instructs those of us who know that truth is an inconsistent concept to interpret the rest of the users of ‘true’ in that way.

3.8.2. Revenge
The revenge paradox phenomenon is the nemesis of virtually everyone who sets out to solve the liar. Revenge paradoxes are almost impossible to avoid, and they thwart most attempts to say something consistent (or at least nontrivial) about the aletheic paradoxes. However, the inconsistency approach outlined here does not give rise to any revenge paradoxes.
How does it avoid them? Consider a sentence that might seem to give rise to a revenge paradox:

(19) (19) is either false or paradoxical.

One might try to argue that (19) causes a problem for the assessment-sensitivity approach in the following way:

1. Assume (19) is true.
2. ‘(19) is either false or paradoxical’ is true.
3. (19) is either false or paradoxical.
4. Assume (19) is either false or paradoxical.
5. ‘(19) is either false or paradoxical’ is true.
6. (19) is true.

If this argument were valid, it would be a problem, but it is not. The assessment-sensitivity approach is fully classical, so the logical inferences in this argument are all fine. However, since (19) is paradoxical (that is, ascending true and not descending true from any context of assessment), the move from step 2 to step 3 is invalid, and the move from step 4 to step 5 is invalid. The upshot is: the assessment-sensitivity approach implies that (19) is paradoxical, but it does not imply that ‘(19) is paradoxical’ is true. So, of course, the assessment-sensitivity approach has consequences that it deems untrue. Is this a problem? It would be a problem if the assessment-sensitivity approach implied that truth is a consistent concept, but it does not. Instead, the assessment-sensitivity approach implies that truth is an inconsistent concept that cannot be legitimately applied in every circumstance. Indeed, the theory of ascending truth and descending truth specifies exactly where truth can be used without running into problems (that is, when the difference between ascending truth and descending truth is negligible). Accordingly, the assessment-sensitivity approach is outside the legitimate scope of truth—in applying truth to it, one gets odd results. Consider the analogy. Even though the concept of mass is inconsistent, it is fine to use it in certain situations (that is, when the difference between relativistic mass and proper mass is negligible). However, if one tries to use mass outside these situations, say, in calibrating the atomic clocks in GPS satellites, it will not provide accurate predictions. Instead, in these circumstances, one needs to use the replacements.

In the case of truth, one can reasonably ask whether the assessment-sensitivity approach is ascending true and whether it is descending true. All the central principles of the assessment-sensitivity approach are descending true. However, descending truth is not preserved under
logical consequence, so it could turn out that the assessment-sensitivity approach has some consequences that are not descending true. They would, of course, be ascending true. I have been unable to identify any consequences of the assessment-sensitivity approach that have this feature, but I have not been able to rule it out either. If it does have these kinds of consequences, then it would be in the same boat as the ADT. Either way, there are not any revenge paradoxes here.

One consequence of the dearth of revenge paradoxes is that the inconsistency approach presented here does not require any expressive impoverishment in the languages to which it applies. It needs no object language/metalanguage distinction, and it works perfectly well for languages that have the capacity to express the theory of ascending and descending truth (ADT) and the assessment-sensitivity theory of ‘true’.80

3.8.3. Other Approaches to the Paradoxes
Consider the options for addressing the aletheic paradoxes in a bit more detail. The innovation in this subsection is that they are split into philosophical approaches, which discuss some feature of truth predicates of natural languages relevant to resolving the paradoxes, and logical approaches, which focus on artificial languages and propose principles that truth predicates obey and logics for languages containing truth predicates. Philosophical approaches to the aletheic paradoxes do two things: they tell us something about the truth predicate that is relevant to solving the aletheic paradoxes, and they tell us something about the paradoxical truth bearers and the paradoxical reasoning. Logical approaches specify principles that truth predicates obey and logics that are compatible with these principles. The theories of truth offered by logical approaches apply to certain artificial languages, and these theorists use techniques from mathematical logic to investigate the properties of these theories and to prove things about them (for example, consistency relative to a background mathematical theory). Although this distinction is not common, I find it a crucial aid to understanding the range of alternatives since many approaches appeal to mathematical structures, each of which can be (and often is) given different philosophical interpretations by different theorists.81

80. See Scharp 2013, forthcoming, for details.
81. Field (2008) explicitly formulates most of the logical approaches described below, but he is not as careful about the philosophical approaches and does not consider the space of combinations of the two.
Philosophical approaches to the aletheic paradoxes include:\textsuperscript{82}

1.\textit{ Meaningfulness}: paradoxical sentences are meaningless (see Ushenko [1937]; Grover [1977]; Brandom [1994]; Sorensen [2001]; Armour-Garb [2001]; and Beall [2001]).

2.\textit{ Ambiguity}: truth predicates are ambiguous (that is, they have different meanings on different occasions of use), and the paradoxical reasoning is invalid by equivocation (see Parsons [1974]; Kripke [1975]; and Williamson [2000]).

3.\textit{ Contextual}: truth predicates (or sentences that contain them) are context dependent (that is, they express different contents on different occasions of use), and the paradoxical reasoning is invalid because it violates the logic of indexicals (see Thomason [1976]; Parsons [1974]; Burge [1979]; Barwise and Etchemendy [1987]; Gaifman [1992]; Simmons [1993]; Glanzberg [2004]; and Shapiro [2006]).

4.\textit{ Circularity}: truth predicates express circularly defined concepts, and the paradoxical reasoning is invalid because it violates the logic of circularly defined concepts (see Gupta and Belnap [1993]).

5.\textit{ Indeterminacy}: truth predicates exhibit indeterminacy, and the paradoxical reasoning is unsound because it violates the logic appropriate for indeterminacy (see van Fraassen [1968]; Kripke [1975]; McGee [1991]; Soames [1999]; Maudlin [2004]; and Field [2008]).

6.\textit{ Inconsistency}: truth predicates express inconsistent concepts (or render languages of which they are constituents inconsistent), and either: (i) the paradoxical reasoning is sound because all the principles involved are constitutive or (ii) the paradoxical reasoning is unsound because one of the principles involved is constitutive but false (or invalid).\textsuperscript{83}

Logical approaches to the aletheic paradoxes are classified by the combination of aletheic principles and logical principles compatible with the theory of truth offered. The aletheic principles are:

\textsuperscript{82} These categories are intended to break up the literature in a natural way, but they should not be taken to be exclusive or exhaustive.

\textsuperscript{83} For dialetheic examples, see Priest 1979, 2006a; and Beall 2009. For the others, see Chihara 1979; Yablo 1993a, 1993b; Eklund 2002a; Patterson 2006; and Scharp 2007, 2008, 2011, 2013, forthcoming.
(T-In) If \( p \), then \((p)\) is true.
(T-Out) If \((p)\) is true, then \( p \).
(T-Intro) \( p \vdash (p) \) is true.
(T-Elim) \((p)\) is true \( \vdash p \).

The differences between these principles is crucial. The conditional principles, (T-In) and (T-Out), are the strongest. The inferential principles, (T-Intro) and (T-Elim), are weaker than the conditional principles (although they are equivalent in logical systems for which one can prove a deduction theorem—that is, those that allow conditional proof). The logics are harder to describe, but there are five main options:

(i) Classical logic, which has all the standard introduction and elimination rules for each connective plus the hypothetical rules.
(ii) Weakly classical logic, which has all the inference rules of classical logic but no meta-rules.\(^{84}\)
(iii) Paracomplete logic, on which the law of excluded middle and some classical rules are invalid.\(^{85}\)
(iv) Paraconsistent logic, on which the rule ex falso quod libet and some other classical rules are invalid.\(^{86}\)
(v) Substructural logic, on which some of the structural rules governing derivability are invalid.\(^{87}\)

When we map out the compatible combinations of aletheic principles and logics, we get the following seven options for logical approaches to the aletheic paradoxes:

1. Classical Glut: classical logic and (T-In).\(^{88}\)
2. Classical Gap: classical logic and (T-Out) (Feferman [1982]; Maudlin [2004]).
3. Classical Symmetric: classical logic, neither (T-Intro) nor (T-Elim) (McGee [1991]).

\(^{84}\) That is, weakly classical logics do not validate conditional proof, reductio, or reasoning by cases. See Field 2008, chaps. 10–12, for discussion.

\(^{85}\) Paracomplete logics (for example, \( K_3 \)) validate ex falso and double negation elimination but not conditional proof, reductio, or contraction.

\(^{86}\) Paraconsistent logics (for example, LP) validate excluded middle and double negation elimination but not disjunctive syllogism, ex falso, or contraction.

\(^{87}\) See Restall 1994, 2000, and Beall and Ripley, forthcoming, for background on substructural logics.

\(^{88}\) I am unaware of any classical glut theorists; see Field 2008 for discussion.
4. **Weak Classical**: weakly classical logic, (T-Intro), and (T-Elim) (Friedman and Sheard [1987]; Gupta and Belnap [1993]; and Yablo [1993a and b]).

5. **Paracomplete**: paracomplete logic, (T-In), and (T-Out) (Kripke [1975]; Soames [1999]; and Field [2008]).

6. **Paraconsistent**: paraconsistent logic, (T-In), and (T-Out) (Priest [2006a, 2006b]; Beall [2009]).

7. **Substructural**: substructural logic, (T-In), and (T-Out) (Tennant [1997]; Weir [2005]; Zardini [2011]; Ripley [2012]).

Notice that the first two options permit only one (primary) aletheic principle, the third has no (primary) aletheic principles, and the other four have two principles—the weakly classical approaches have the moderate-strength aletheic principles, and the paracomplete, paraconsistent, and substructural approaches have the strongest aletheic principles. Thus, as one might expect, the strength of the logic and the strength of the aletheic principles vary inversely.

The obvious question now is: what are the fruitful combinations of philosophical approaches and logical approaches to the paradoxes? Describing each combination would be tedious and not add much to this essay. Instead, I have depicted them in figure 4, which contains a diagram showing philosophical approaches on one side and logical approaches on the other, with important connections between them and the theorists who work on them.

There are several trends to notice. First, the meaningfulness philosophical approach has no connections to the logical approaches—that is because it tries to find some problem with paradoxical truth bearers. Approaches like these do not need logical approaches to handle paradoxical sentences because they imply that there is no problem to be handled.

Second, a single philosophical approach might be paired with distinct logical approaches. For example, the indeterminacy approach is championed by Hartry Field, Tim Maudlin, and Vann McGee. Field pairs it with a paracomplete approach, McGee (1991) with a classical

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89. However, some classical symmetric theorists accept very weak principles, for example:

- (T-Enter) If ⊢ p, then ⊢ ¬p is true.
- (T-Exit) If ⊢ ¬p is true, then ⊢ p.

See McGee 1991 for an example.
symmetric approach, and Maudlin (2004) with a classical gap approach. In each of these combinations, the notion of indeterminacy is interpreted differently. The same point holds of contextual views as well.

Third, a single logical approach might be paired with distinct philosophical approaches. For example, the orthodox approach pairs a Tarskian hierarchy (a classical gap approach) with an ambiguity approach—it interprets ‘true’ as ambiguous so that it can have the meaning of any one of the predicates in the Tarskian hierarchy. Tyler Burge (1979, 1982a,
1982b) uses the same logical approach (that is, the Tarskian hierarchy), but he pairs it with a context-dependence philosophical view. He claims that ‘true’ is an indexical that has an invariant meaning (that is, character) and variable content; in any given context, ‘true’ can have the content of any of the predicates in the Tarskian hierarchy. These are very different interpretations (that is, ambiguity and indexicality) of the same formal structure (that is, the Tarskian hierarchy). Another example is the revision theory, which is a weakly classical (logical) approach and was initially designed by Gupta and Belnap (1993) to be paired with a circularity (philosophical) approach. However, Stephen Yablo (1993a, 1993b) pairs the revision theory with an inconsistency (philosophical) approach, while Lionel Shapiro (2006) suggests that the context-dependence (philosophical) approach is a better fit for revision theories. Again we have two very different philosophical interpretations of the same mathematical structure.

In this essay, I offer the combination of a novel inconsistency (philosophical) approach, which takes words that express inconsistent concepts to be assessment sensitive, and a symmetric classical (logical) approach. Notice that this combination is the first to pair an inconsistency philosophical approach with any kind of classical logical approach. As such, it provides for the first time a classically consistent theory of our inconsistent concept of truth.

In a essay of this length, it would be impossible to compare and contrast the assessment-sensitivity approach offered here with all the others listed in figure 4. Nevertheless, I can summarize my reasons for thinking that it is superior to its competitors. First, as discussed in the introduction, all those who endorse traditional approaches, which include all philosophical approaches besides inconsistency, end up flatly denying principles that are clearly constitutive of either truth or our logical concepts, depending on which logical approach they adopt. Only an inconsistency approach can avoid this problem. Moreover, dialetheic-inconsistency approaches have the same problem—they are for all intents and purposes traditional approaches. Only a nondialetheic-inconsistency approach can avoid this problem, but of those who endorse these approaches (for example, Chihara and Eklund), only Yablo has adopted a logical approach to the paradoxes. His theory has not received much attention, but it implies that the truth value of paradoxical sentences changes continuously, which seems rather implausible; it also is not compatible with classical logic (it is a weakly classical approach). So the assessment-sensitivity theory presented here is the first to combine a non-
dialetheic-inconsistency approach with a classical logical approach. This is not just filling in a slot in logical space. If what I have said is right, then it is the only approach to the aletheic paradoxes that does not do violence to our conceptual principles.

Second, the assessment-sensitivity approach is compatible with classical logic and requires no expressive limitations on the languages to which it applies. It is impossible to find this pair of features in any other combination approach to the aletheic paradoxes that also entails that (T-In) and (T-Out) are constitutive of our concept of truth. Moreover, the combination of assessment-sensitivity as an inconsistency approach and classical symmetric as a logical approach completely avoids the revenge paradoxes that have been the most difficult problem facing anyone who tries to say something about the liar and its ilk.

Finally, and most importantly, we have had good reason to think that truth is an inconsistent concept for a long time. We also have a precedent for dealing with inconsistent concepts (as illustrated by the case of mass). The approach offered here simply does for truth what we have always done when we find out that one of our useful concepts is inconsistent—replace it with consistent concepts that do its job in certain situations and figure out how to interpret those who continue to use the inconsistent concept in question. On this line of thought, truth joins mass and a host of other prominent concepts in being replaced for certain purposes due to inconsistency.

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Truth, the Liar, and Relativism


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