Comment on David Chalmers's "Probability and Propositions"

by

David Braun

University of Rochester

david dot braun at rochester dot edu

For the Online Philosophy Conference, May 2006

0. Introduction

Propositions are the referents of the 'that'-clauses that appear in the direct object positions of typical ascriptions of assertion, belief, and other binary cognitive relations. In that sense, propositions are the *objects* of those cognitive relations. Propositions are also the *semantic contents* (meanings, in one sense) of declarative sentences, with respect to contexts. They are what sentences *semantically express*, with respect to contexts. Propositions also bear truth-values. The truth-value of a sentence, in a context, is the truth-value of the proposition that it semantically expresses, in that context.

This much is common ground among many (but not all) philosophers. I accept other claims about propositions that are more controversial. Propositions (I hold) are *Russellian*: they are structured entities whose constituents include individuals, properties, and relations. The contribution of a proper name to the proposition that a sentence semantically expresses (in a context) is the referent of that name. Thus, the semantic content of 'Bill Clinton' is Bill Clinton himself, and the semantic content of 'Bill Clinton smokes' is a proposition whose constituents are Bill Clinton and the property of smoking (ignoring tense, as I shall do from here on). Such

singular propositions are among the objects of belief, assertion, and other cognitive relations. This combination of a Millian view about proper names with a Russellian theory of propositions might appropriately be called 'Millian Russellianism', or 'MR' for short.

David Chalmers, in his stimulating paper "Probability and Propositions," defines a closely related view, *Referentialism*, as follows (see also the penultimate paragraph of his introduction).

> Referentialist views say that insofar as beliefs are about individuals (such as Nietzche), the objects of these belief are determined by those individuals. On one such view, the objects of belief are Russellian propositions composed from the individuals and properties that one's belief is about. On another such view, the objects of belief are sets of possible worlds in which the individuals in question have the relevant properties.

MR entails Referentialism. Therefore, any argument that showed that Referentialism is false would also show that MR is false.

One common argument against Referentialism (and so against MR) concerns substitution. Referentialism entails that two sentences that differ only in having corresponding occurrences of distinct co-referring proper names have the same semantic content. So, for instance, (1a) and (1b) have the same semantic content, as do (2a) and (2b).

1. a. Twain is Twain.
   b. Twain is Clemens.
2. a. Bill Clinton believes that Twain is Twain.
   b. Bill Clinton believes that Twain is Clemens.

Thus according to Referentialism, anyone who believes the proposition semantically expressed by (1a) also believes that expressed by (1b), and (2a) and (2b) must have the same truth-value. Many philosophers take this consequence of Referentialism to be a strong reason to reject it. Defenders of Referentialism, including defenders of MR, have replied to this objection at length (Braun 1998; Salmon 1986, 1995; Soames 2002).

Chalmers presents a different sort of argument against Referentialism. Roughly speaking, he argues that if Referentialism is true, then certain claims about *rational belief* are false. But those latter claims are true, so (he concludes) Referentialism is false. There are well-known objections of this sort against Referentialism, to which defenders of MR have replied (see Salmon 1989, 1995; Braun 1998). Chalmers's objection is novel, however, insofar as it concerns rational *degrees* of belief and Bayesianism. I begin below with a review of the older objections and replies, for those who are not already thoroughly familiar with them. I then indicate how Chalmers's objections raise problems of fundamentally the same sort, and can be answered in fundamentally the same way.

1. Two Objections to Referentialism That Concern Rational Belief

Here is the first objection to Referentialism that I will consider. Tommy is a seventh-grade student who has just read *Huckleberry Finn*. He believes that Mark Twain wrote it. Tommy also lives next door to Samuel Clemens and thinks that Samuel Clemens is nearly illiterate. Nevertheless, Tommy has considered whether Samuel Clemens wrote *Huckleberry Finn*, and has concluded that he did not. Tommy is entirely rational in his beliefs. But if Referentialism is true, and Tommy rationally believes that Twain wrote *Huckleberry Finn*, then Tommy also (thereby) rationally believes that Clemens wrote *Huckleberry Finn*. So Tommy rationally believes both that Clemens wrote *Huckleberry Finn* and that Clemens did not write *Huckleberry Finn*. So if Referentialism is true, Tommy rationally believes both a proposition and its negation. But this is inconsistent with the following principle of rational belief, *No Contradictions*.

No Contradictions
No rational agent believes both a proposition and its negation.

Therefore, we conclude that Referentialism is not true.[1]

Second objection: Sherlock is investigating a serious crime. He has rationally come to believe that if Jekyll was not in his home on Tuesday night, then he committed the crime. Sherlock then hears from a reliable source that Hyde was roaming the city on Tuesday night. Thus Sherlock rationally comes to believe that Hyde was not in his home on Tuesday night. Jekyll is, in fact, identical with Hyde. But since Sherlock is inclined to dissent from the sentence 'Jekyll is Hyde', he does not conclude that Jekyll committed the crime. His failure to draw the conclusion, or otherwise revise his beliefs, is consistent with his being rational. But if Referentialism is true, and Sherlock rationally believes that Hyde was not in his home on Tuesday night, then Sherlock also thereby rationally believes that Jekyll was not in his home on Tuesday night. So if Referentialism is true, then his failure to conclude that Jekyll committed the crime, or to otherwise revise his beliefs, conflicts with the following principle of rational belief , *Modus Ponens*.

Modus Ponens
If a rational agent *A* believes that if *P* then *Q*, and *A* comes to believe *P*, then *A* will either (a) come to believe *Q* or (b) cease to believe *P* or (c) cease to believe the proposition that if *P* then *Q*.

---

[1] *No Contradictions* is oversimplified, by everyone's lights. A rational agent might believe both a proposition and its negation if she is distracted, or not considering the proposition and its negation simultaneously, and so on. Even then, it is true only *ceteris paribus*. We could instead consider a principle concerning *ideal* rational agents ("No *ideally* rational agent believes both a proposition and its negation") or a prescriptive principle ("No agent *should* (as a matter of rationality) believe both a proposition and its negation"). I ignore these subtleties below.

Therefore, we conclude that Referentialism is not true.[2]

2. Initial Reply

As plausible as *No Contradictions* might be, there are examples that cast serious doubt on it, for reasons entirely independent of Referentialism (Kripke 1979 and Salmon 1989, 1995).

> *Pierre*
> Pierre reads travel brochures written in French, and rationally comes to believe that London is pretty, a belief he would express by saying 'Londres est jolie'. He travels to London, observes its uglier parts, and rationally comes to believe that London is not pretty, a belief he would express, after learning English by the "direct method", by saying 'London is not pretty'. He thereby rationally comes to believe that London is pretty and that London is not pretty.
>
> *John*
> John is shopping and, via a mirror, sees a man with a cart that is spilling sugar. John sincerely says 'He is making a mess' while pointing at the man in the mirror. John also sincerely says 'I am not making a mess' and so believes that he is not making a mess. But John is the man to whom he referred with 'he' while pointing in the mirror. So John rationally believes both that he is making a mess and that he is not making a mess.
>
> *Ralph*
> Ralph sees Ortcutt lurking in the shadows near CIA headquarters and sincerely says 'He is a spy'. He later sees Ortcutt receiving a medal and sincerely says 'He is not a spy'. Yet Ralph continues to believe that the man he saw outside CIA headquarters is a spy, and when he thinks of the first event, he thinks to himself 'He is a spy'. So Ralph rationally believes that Ortcutt is a spy and that Ortcutt is not a spy.

There is a strong, *pre-theoretic* urge to attribute contradictory beliefs to Pierre, John, and Ralph. You can insist that the ascriptions of contradictory beliefs do not tell the whole story and that there's more to say. (And you'd be right.) But the attributions are still correct, as far as they go. It is, at the very least, extremely difficult to see which of them is false. Perhaps a sophisticated

---

[2]Again, *Modus Ponens* must be qualified, and is true only *ceteris paribus*. Again, I will ignore this in what follows.

theorist can analyze them so that they do not attribute contradictory beliefs to the relevant agents. But all of that is (so to speak) *post*-theoretic, and takes quite a bit of un-obvious theoretical work. At first glance, they are outright counterexamples to *No Contradictions*, and at the very least, they should shake our confidence in that principle. So, a theorist who denies *No Contradictions* has strong pre-theoretic intuitions favoring his view.

There are similar pre-theoretic counterexamples to *Modus Ponens*. I present only one.

> *Pierre and New York*
> After learning English by the "direct method", Pierre meets an English-speaking traveler who has been to both London and New York. The traveler says to Pierre (in English) 'If London is pretty, then so is New York'. Pierre believes what the traveler says, and so comes to believe that if London is pretty then so is New York. He already believes that London is pretty. And yet he does not conclude that New York is pretty, or otherwise revise his beliefs.

Again, one might try to resist attributing to Pierre belief in both the conditional proposition and its antecedent. But it is very difficult to see how either attribution could be false. A theorist might analyze the attributions so that (surprisingly) Pierre does not violate *Modus Ponens*. But that would take a lot of theoretical twisting and turning. A theorist who denies *Modus Ponens* has substantial intuitive backing for his denial.

Thus, in reply to the above arguments against Referentialism, I deny the principles concerning rational belief on which they rely, namely *No Contradictions* and *Modus Ponens*.

3. More Developed Reply

I deny *No Contradictions* and *Modus Ponens*, but I do not maintain that they are completely misguided. Everyone should admit that there is something to them. Consider the following two cases.

Paul
Paul understands and sincerely assents to 'Elwood Fritchey works for Microsoft'. He hears a friend whom he takes to be reliable utter 'Elwood Fritchey does *not* work for Microsoft'. Paul assents and goes on to say 'Elwood Fritchey works for Microsoft and it is not the case that Elwood Fritchey works for Microsoft'. He insistently says 'There is only one person named 'Elwood Fritchey' and only one thing named 'Microsoft''.

Mary
Mary believes that if Elwood Fritchey works for Microsoft, then he lives in Redmond. She comes to believe that Elwood Fritchey works for Microsoft. She does not conclude that he lives in Redmond. In fact, she comes to believe that he does *not* live in Redmond. She sincerely says 'Elwood Fritchey works for Microsoft, and if he works for Microsoft, then he lives in Redmond, and he does not live in Redmond, and there is only one person named 'Elwood Fritchey' and only one thing named 'Microsoft' and only one place named 'Redmond''.

Paul's and Mary's beliefs are not rational in their beliefs. What distinguishes their beliefs from those of Pierre, John, and Ralph? Like others (such as Nathan Salmon 1989 and 1995), I would appeal to *propositional guises* (or *ways of taking* propositions) and a ternary relation underlying the binary relation of believing. I explain (see also Braun 1998).

Imagine that Ralph sincerely and assertively utters 'You are in London' while addressing Pierre. Pierre replies by sincerely and assertively uttering 'I am in London'. It's intuitive to say that Ralph and Pierre assert the same proposition, but in different *ways*. It's similarly plausible to say that they believe the same proposition, but in different ways or under different guises. We thus arrive at the idea that a single proposition can be believed in different ways or under different guises.

On the view I favor, belief, like assertion, is a mediated relation between an agent and a proposition. Sentences serve as mediators of assertion: an agent asserts a proposition by assertively uttering a sentence. Propositional guises are mediators of belief: an agent believes a proposition by standing in a certain psychological relation to the guise. Consequently, anytime

an agent stands in the binary belief relation to a proposition, she also stands in a certain ternary relation to both a guise and that proposition. In fact, she stands in the former binary relation *in virtue of* standing in the latter ternary relation. Let 'Guise(x, P, A)' abbreviate 'x is a guise of (proposition) P for (agent) A'. Then we can describe the relation between believing and the underlying ternary relation *BEL* as follows (see Salmon 1986,1995).

A believes P iff $\exists x$(Guise(x, P, A) & *BEL*(A, P, x)).

Further, it is reasonable to think that guises stand in (something like) logical relations. Suppose that, immediately after Pierre says 'I am in London', he learns that he is, in fact, just outside the city's limits. He might say 'I was wrong. I am not in London'. He thereby asserts the propositional-negation of the proposition that he formerly asserted, using a sentence that is the sentential-negation of the sentence that he formerly uttered. He similarly believes the propositional-negation of the proposition that he formerly believed, under a guise that is the guise-negation of the former guise. We can assume that for every guise, there is exactly one guise that is its guise-negation.

> If Guise(x, P, A), then (i) there is exactly one guise y such that y is the guise-negation of x (call it '*Neg*(x)', so y=*Neg*(x)), and (ii) Guise(*Neg*(x), not-P, A)

Similarly, for any two guises x and y, there is a material-conditionalization of them, *Cond*(x, y).

Using guises and the ternary *BEL* relation, we can say why Pierre, John, and Ralph are rational, while Paul and Mary are not. Pierre *BEL*s the proposition that London is pretty under guise x, and *BEL*s the proposition that London is not pretty under guise y, but y is not the guise-negation of x (that is, $y \neq$ *Neg*(x)). This is consistent with his being rational. Paul, on the other hand, *BEL*s the proposition that Elwood Fritchey works for Microsoft under guise z, and also *BEL*s that Elwood Fritchey does *not* work for Microsoft under the guise-negation of z (namely

Neg(*z*)). Paul is therefore not rational. Pierre *BEL*s that London is pretty under guise *f* ('*f*' for 'French') and *BEL*s that if London is pretty then New York is pretty under guise *Cond*(e_1, e_2) ('*e*' for 'English'). He fails to draw a conclusion by modus ponens, or otherwise revise his beliefs, but that is consistent with his being rational, given the mismatch in guises. Mary, on the other hand, *BEL*s that Elwood Fritchey works for Microsoft under guise *m* and *BEL*s that if Elwood works for Microsoft then he lives in Redmond under guise *Cond*(*m*, *r*) and she *BEL*s that Elwood does *not* live in Redmond under the guise-negation of *r*, *Neg*(*r*). This is inconsistent with her being rational. So *No Contradictions* and *Modus Ponens* are false, but they have close relatives concerning guises and *BEL* that are true.

> *No Contradictory Guises*
> No rational agent *A* is such that *BEL*(*A*, *P*, *x*) and *BEL*(*A*, not-*P*, *Neg*(*x*)).

> *Guise Modus Ponens*
> If *A* is a rational agent, and *BEL*(*A*, if *P* then *Q*, *Cond*(*x*, *y*)) and it comes to be the case that *BEL*(*A*, *P*, *x*), then it will come to be the case that either (a) *BEL*(*A*, *Q*, *y*) or (b) it is not the case that *BEL*(*A*, *P*, *x*) or (c) it is not the case that *BEL*(*A*, if *P* then *Q*, *Cond*(*x*, *y*)).

Generalizing a bit, the following principle seems correct.

> *Rational Believing and BELing*
> Agent *A* rationally believes proposition *P* iff $\exists x$(Guise(*x*, *P*, *A*) & Rationally*BEL*(*A*, *P*, *x*)).

Let us dub the view that combines Referentialism with these claims about guises 'Guise Referentialism'.

"What are these guises?", you might ask. They are the things that play the right role in mediating belief. Guise Referentialists might differ among themselves about their nature. I would impose the following requirement on guises: any two agents who are duplicates in intrinsic physical respects must have the same guises. (Please assume with me that there are no

non-physical mental properties.) My Twin Earth doppelgänger and I believe different propositions: for instance, I believe that Aristotle was a philosopher, whereas he believes that Twin Aristotle was a philosopher, but we share the same (type of) guises. But that constraint leaves us with many plausible candidates for guises. I deny that guises are natural language sentences or linguistic meanings of such sentences, because of Paderewski cases and Perry-type cases. But guises could, for instance, be (intrinsic) mental states, perhaps involving a system of mental representation, such as formulas in a Language of Thought. Some Guise Referentialists are agnostic about the LOT. So am I, though I find it rather plausible.

4. Does Guise Referentialism Entail That Propositions Are Not the Objects of Belief ?

Guise Referentialism says that agents believe propositions by standing in the ternary *BEL* relation to both guises and propositions. It appeals to guises to formulate principles of rationality. Guise Referentialism entails that we cannot state illuminating principles of rationality by reference to the logical properties and relations of propositions *alone*. We must pay attention to the logical properties and relations of guises. So does Guise Referentialism imply that propositions are not the objects of belief? Does it imply that agents instead believe guises, or proposition-guise pairs?

No. Guise Referentialism entails that the referents of 'that'-clauses in belief ascriptions refer to (Millian-Russellian) propositions. It says that *believing* is a binary relation between agents and propositions (even though *BEL*ing is a ternary relation). So the view says that propositions are the objects of belief. In fact, the view entails that propositions are the objects of the binary relation of *rational* belief.

Moreover, the view entails that there is a kind of mismatch between guises and propositions that is inconsistent with the view that guises or proposition-guise-pairs are the objects of belief. For instance, according to Guise Referentialism, there are cases in which there are two guises and one proposition believed, as in the case of Pierre, who *BEL*s that London is a city under two distinct guises, one "French" and the other "English". Ralph, when he utters 'You are in London' to Pierre, and Pierre, when he utters 'I am in London' believe the same proposition, but stand in *BEL* to different guises. In such cases, the agents believe the same thing. Guise Referentialism also allows there to be cases of one guise and several propositions: I *BEL* that Aristotle was a philosopher under a certain guise *x*, but in another possible world (where historians of philosophy are confused and my guise *x* is historically related in the right way to Plato), I *BEL* that Plato was a philosopher under that same guise *x*. There may even be cases of agents who have guises but believe nothing: imagine a split-second duplicate of me who forms in outer space due to a quantum improbability. In short, Guise Referentialism entails that the objects of belief (whether rational or irrational) are propositions.

5. Subjectivism, Bayesianism, and Referentialism

Subjectivists (about probability) seek more refined constraints on belief (or something like belief) than we have seen so far. Subjectivists suppose, very roughly speaking, that agents believe propositions to varying degrees. Less roughly, we can use 'd-believe' to describe a certain ternary relation among an agent, a proposition, and a number (a degree).

D-believe(*A*, *P*, *D*).

In English, we might say:

A d-believes *P* to degree *D*.

Subjectivists seek to state rational constraints on the d-belief relation.

D-believing is not believing. For one thing, believing is a binary relation, whereas d-believing is ternary. (More on this below.) There is some intimate relation between the two relations, but it is not at all clear what it is. Believing is not simply d-believing to some degree or other. Most Subjectivist views say that for any proposition *P* and its negation not-*P*, I d-believe *P* to some degree and I also d-believe not-*P* to some degree. If believing were just d-believing to some degree or other, then I would believe both *P* and not-*P*, for all propositions whatsoever. But I don't. So believing is not simply d-believing to some degree or other. It's also not the case that believing *P* is d-believing *P* to a degree higher than *n*, where *n* is fairly high (say, .8). First, there seems to be no non-arbitrary number to choose. Second, it seems that no matter what *n* we choose, a reasonable subject could d-believe to degree *n* that he will win the lottery, and yet not believe that he will win the lottery.

What is the *object* of d-believing? Speaking of the object of a relation makes most sense when the relevant relation is binary. But d-believing is a ternary relation. So there is no obvious entity to label as the object of the relation. If we were to single out one thing to be the object of d-believing, then we would have to make a rather arbitrary choice among the proposition, the number, and one of the proposition-number pairs.

We can, by abstracting on the ternary d-believing relation, define several types of binary relations, and each of these would clearly have a proposition as its object. There is the binary relation between agents *A* and propositions *P* of d-believing to some degree or other.

$\lambda A \lambda P[\exists x(A$ d-believes P to degree $x)]$

This relation is not d-believing, and as we saw above, it is not the relation of believing either. There is also, for each number *n*, a binary relation between agents *A* and propositions *P* of d-believing to exactly that degree.

$\lambda A \lambda P$[*A* d-believes *P* to degree *n*]

All of these relations are binary, and all of them clearly have propositions as their objects. But none of them is the relation of d-believing. It cannot be the case that all of them are types of believing (in the way that, say, strongly believing is a type of believing). And no one, or family of them, seems to be believing, either.

We could simply stipulate that the object of the ternary d-believing relation is a proposition. I concede that this would be a rather natural stipulation, for two reasons: (a) when we use English to describe d-believing, 'that'-clauses referring to propositions appear in the direct object position of the ascription, and (b) d-believing is supposed to be closely related (somehow) to believing. But I still maintain that declaring that propositions are the objects of d-believing is a stipulation.

Deliberately idealizing, Subjectivists say that every agent d-believes every proposition to some degree (exactly one degree for each proposition). So for every agent *A*, we can define a function C_A from propositions *P* to numbers *n* such that $C_A(P)=n$ iff *A* d-believes *P* to degree *n*. Call this '*A*'s credence function'. According to Subjectivism, rational agents' credence functions satisfy the axioms of probability theory. Therefore, every rational agent's credence function maps every logically true proposition to 1. All logically contradictory propositions are mapped to 0. If a credence function assigns *n* to proposition *P*, then it assigns $1-n$ to proposition not-*P*. If proposition *P* logically entails proposition *Q*, then the function assigns a number to *P* less than

or equal to the number it assigns to *Q*. A credence function that satisfies the axioms is *coherent*. One that doesn't is *incoherent*.

Bayesians are Subjectivists who hold that a rational agent must *revise* (or *update*) her degrees of belief (and thus her credence function), when she receives new evidence, by *conditionalization* (or something like it, such as Jeffrey-conditionalization). Not all Subjectivists are Bayesians.

Chalmers argues that if Referentialism is true, then Bayesianism is false. But, he thinks, Bayesianism is true, so he concludes that Referentialism is false. His argument assumes that conditionalization is the correct way to update degrees of belief. But I shall restrict my attention to conflicts between Referentialism and (mere) Subjectivism, for two reasons. First, Bayesianism entails Subjectivism, so an argument from Subjectivism against Referentialism is also an argument from Bayesianism against Referentialism. Second, by considering an argument from Subjectivism (alone) against Referentialism, we avoid making the strong assumption that conditionalization is the correct way to update.

If Referentialism is true, then some rational agents' credence functions are incoherent. (Assuming that they have credence functions at all. See below.) Tommy presents an example of incoherence, if we make certain assumptions about connections between believing and d-believing. Tommy believes that Twain wrote *Huckleberry Finn*. So, we can reasonably assume that he d-believes that Twain wrote *Huckleberry Finn* to a rather high degree, at least greater than .5. He believes that Clemens did *not* write *Huckleberry Finn*. So, presumably, he d-believes the proposition that Clemens did *not* write *Huckleberry Finn* to a rather high degree, at least greater than .5. But if Referentialism is true, then the proposition that Twain wrote *HF* is

the same as the proposition that Clemens wrote *HF*. So Tommy d-believes that Twain wrote *HF* to a degree greater than .5 and also d-believes that Twain did not write *HF* to a degree greater than .5. So he d-believes both a proposition and its negation to degrees higher than .5. So if Referentialism is true, then Tommy's credence function (if he has one) is incoherent.

Sherlock presents another case of incoherence, at least after he comes to believe that Hyde was not at home on Tuesday night. Sherlock believes that if Jekyll was not at home on Tuesday night, then Jekyll committed the crime. So he presumably d-believes this conditional proposition to a rather high degree. Similarly, he d-believes that Hyde was not at home on Tuesday to a rather high degree. So we can reasonably assume that he d-believes the conjunction of these two propositions to a degree higher than .5. Yet, if Referentialism is true, the proposition that Hyde was not at home on Tuesday is the same as the proposition that Jekyll was not at home on Tuesday. So Sherlock d-believes the proposition that (Jekyll was not at home on Tuesday, and if Jekyll was not at home on Tuesday, then Jekyll committed the crime) to a degree higher than .5. This proposition entails that Jekyll committed the crime. Yet Sherlock d-believes this proposition to a degree less than .5. So his credence function (if he has one) is incoherent.

So, if Referentialism is true, then Tommy's and Sherlock's credence functions (if any) are incoherent. If their credence functions are incoherent, then if Subjectivism is true, then they are irrational. So, if both Referentialism and Subjectivism are true, then Tommy and Sherlock are irrational. Subjectivism is true. So if Referentialism is true, then Tommy and Sherlock are irrational. They are not irrational. So Referentialism is not true. That's Chalmers's objection, simplified so that it relies on probabilisitic coherence rather than conditionalization. Of course,

if this argument is sound, then an exactly parallel argument that relies on the truth of Bayesianism is also sound, since Bayesianism entails Subjectivism.

My arguments here parallel Chalmers's arguments against Referentialism (at least the ones that feature Foster), insofar as they can while appealing to coherence rather than Bayesian conditionalization. But, in fact, Chalmers understates the conflict between Subjectivism/Bayesianism and Referentialism, for if Referentialism is true, then Tommy and Foster have no credence functions at all. If the proposition that Twain wrote *HF* is presented to Tommy under the sentence 'Twain wrote *HF*', then he will bet on the proposition at unfavorable odds. If the proposition is presented to him under the sentence 'Clemens wrote *HF*', then he will refuse to bet on it at unfavorable odds. So if Referentialism is true, then either (a) there are *two degrees m* and *n* such that Tommy d-believes that Twain wrote *HF* to degree *m* and to degree *n* or (b) there is *no degree n* such that Tommy d-believes that Twain wrote *HF* to degree *n*. (I prefer option (a). See below.) Either way there can be no credence *function* that assigns to every proposition *the* degree to which Tommy d-believes it. Similar points hold for Sherlock and for Foster.

6. Guise Referentialism, Again

The above argument against Referentialism assumes that Subjectivism is true. (So does Chalmers's Bayesian argument, since Bayesianism entails Subjectivism.) In reply, I deny Subjectivism. The examples that served as counterexamples to *No Contradictions* and *Modus Ponens* also serve as counterexamples to Subjectivism. Pierre believes that London is pretty and that London is not pretty. Presumably, then, he d-believes both propositions to degrees higher

than .5. So, Subjectivism says that Pierre's credence function (if any) is incoherent, and he is therefore irrational. But he is rational. So Subjectivism is incorrect. Similarly, Pierre rationally fails to perform modus ponens after coming to believe that if London is pretty then New York is pretty. He has a greater degree of belief in the conjunctive proposition (that London is pretty, and if London is pretty then New York is pretty) then he does in the proposition that New York is pretty. So, Subjectivism says that he has an incoherent credence function, and so is irrational. But he is rational. Therefore, Subjectivism is false.[3] (And therefore Bayesianism is also false.)

Again, the counterexamples are pre-theoretic, and are independent of Referentialism. One might be able to avoid them by further theorizing, but there is pre-theoretic intuitive support for thinking that Subjectivism of the above sort is false.

But Subjectivism is not completely misguided. Some people with incoherent credence functions are irrational, and it's plausible to suppose that their irrationality has something to do with something like d-belief and credence functions. Paul and Mary, for instance, have incoherent credence functions, and seem to be irrational.

Referentialists who are attracted to Subjectivism can discriminate between the rational and the irrational by appealing, once again, to guises. We make the same assumptions about guises as before, but this time we appeal to a quaternary relation, the *d-BEL* relation, that underlies the ternary d-believing relation. The two are related in just the way that believing and *BEL* are, by existential generalization over guises.

A d-believes *P* to degree *D* iff: $\exists x(\text{Guise}(x, P, A) \ \& \ d\text{-}BEL(A, P, D, x))$

---

[3]In fact, Pierre has no credence function at all, for the same reasons that Tommy does not. Yet Pierre is rational, so Subjectivism is false.

Pierre *d-BELs* that London is pretty to a degree greater than .5 under a certain "French guise" *x*. He also *d-BELs* that London is not pretty to a degree greater than .5 under a certain "English guise" *y*, but *y* is not the guise-negation of *x* (that is, $y \neq Neg(x)$), so that is consistent with his being rational.[4] Paul, on the other hand, *d-BELs* that Elwood Fritchey works for Microsoft to a degree greater than .5 under guise *m* and *d-BELs* that Elwood Fritchey does not work for Microsoft to a degree greater than .5 under the guise-negation of *m*, *Neg*(*m*). So he is irrational. We can state the following rationality constraint on *d-BEL*, which is consistent with Pierre's rationality and yet entails that Paul is not rational.

> *D-BEL and Guise Contradictions*
> If *A* is a rational agent, and Guise(*x*, *P*, *A*) and *d-BEL*(*A*, *P*, *D*, *x*), then *d-BEL*(*A*, not-*P*, $1-D$, *Neg*(*x*)).

A similar principle could be given concerning modus ponens, which would entail that Mary is irrational and would be consistent with Pierre's being rational.

More generally, to state illuminating principles regarding the rationality of d-believing a proposition *P* to a given degree, we need to refer to more than the relevant propositions and their logical relations. We must also refer to the logical properties and relations of the guises under which propositions are *d-BELed* to degrees. Any function on objects to numbers that we wish to use to state constraints on rational d-believing will have to operate not only on propositions but

---

[4]Pierre also *d-BELs* that London is pretty to a degree much less than .5 under a certain "English guise" for that proposition. So he *d-BELs* the proposition that London is pretty to two different degrees, under two guises. So the displayed principle relating d-believing to *d-BELing* commits me to saying that there are two degrees to which Pierre d-believes that London is pretty. Similar points hold for Tommy and the proposition that Twain wrote *Huck Finn*. Therefore, I am now committing myself to option (a) mentioned at the end of section (5): there are *two* degrees (rather than no degree) to which Tommy d-believes the proposition that Twain wrote *Huck Finn*. This assumption plays a role in the next section.

also on guises.

It's easy to find such a function. For every agent *A*, we can define the function CG_A from pairs of propositions and guises to numbers such that: if Guise(x, P, A), then $CG_A(P, x)=n$ iff *d-BEL*(A, P, n, x). Call CG_A '*A*'s credence-under-guises function'. It's plausible to suppose that every rational agent's credence-under-guises function must conform to the axioms of probability.[5] Or so a Referentialist who wants to retain certain aspects of Subjectivism might claim. Call this view 'Subjectivist Guise Referentialism'. An advocate of Subjectivist Guise Referentialism who thinks that conditionalization is the correct way for a rational agent to update her credence-under-guise function would be a *Bayesian* Guise Referentialist.

Summarizing: Chalmers's argument against Referentialism relies on the premise that Subjectivism is true. But there are pre-theoretic counterexamples to Subjectivism, so that premise is false. But a closely related theory that is consistent with Referentialism is correct (or is at least as plausible as Subjectivism), namely Subjectivist Guise Referentialism.

7. Chalmers's Response

Chalmers considers a number of replies to his argument against Referentialism. He anticipates something like the above reply, and the accompanying Subjectivist Guise Referentialism (and its stronger cousin, Bayesian Guise Referentialism). But he thinks that Subjectivist Guise Referentialism is incompatible with Referentialism, for reasons he gives at the end of Section 3, Strategy 3 ("Relativization").

---

[5]To make sense of this, we have to be able to say that one proposition-guise pair is the negation of another, and that one proposition-guise pair can logically entail another. We can do this by referring to the logical relations of the guises.

> "But this view now says, in effect, that the objects of credence (and the entities characterized as propositions by Bayesian theory) are such ordered pairs [of propositions and guises - DB]. If so, the objects of credence behave in a non-referential way, and insofar as we understand objects of credence as objects of belief, then referentialism will be false."

Chalmers presents a more formal version of this argument (using four numbered sentences) at the end of section 7. Here is a slightly expanded version of this argument that explicitly mentions Subjective Guise Referentialism.

1. If Subjective Guise Referentialism (SGR) is true, then the domain of the Subjectivist function used to determine whether an agent *A* is rational is the set of propositions-guise pairs <*P*, *x*> such that *x* is a guise of *P* for *A*.
2. If the domain of the Subjectivist function used to determine whether an agent *A* is rational is the set of propositions-guise pairs <*P*, *x*> such that *x* is a guise of *P* for *A*, then the objects of credence are proposition-guise pairs.
3. Therefore, if SGR is true, then the objects of credence are proposition-guise pairs.
4. If the objects of credence are proposition-guise pairs, then the objects of belief are proposition-guise pairs.
5. Therefore, if SGR is true, then the objects of belief are proposition-guise pairs.
6. If the objects of belief are proposition-guise pairs, then Referentialism is false.
7. Therefore, if SGR is true, then Referentialism is false.

I deny either (2) or (4), depending largely on terminological matters.

Consider (2) first. Its antecedent is plausible, I say. But its consequent is dubious, for what are the objects of credence according to SGR? SGR gives no clear answer to this question. There are three choices, each problematic. (A) The objects of credence, if SGR is true, are the objects of the ternary d-believe relation. (B) The objects of credence, if SGR is true, are the objects of the quaternary *d-BEL* relation. (C) The objects of credence, if SGR is true, are the things in the domain of the credence-under-guise function CG_A.

Choice (C), the things in the domain of the function CG_A, is problematic, because it is unnatural to think of the domain of a function as the objects of that function. If anything, I am tempted to say that the things in the *range* of a function are the function's objects, for when I am

asked to find the object of a function, I resort to thinking of the function as a certain sort of binary relation. But the things in the range of CG_A are numbers, and we do not want to say that the objects of credence are numbers. Choices (A) and (B) are problematic because the relevant relations, d-believing and *d-BELing*, are not binary relations, but ternary and quaternary relations. Insofar as I want to pick out one of the arguments of these relations as their objects, I would pick the *proposition*. I suppose I would do so because, when I attempt to express these relations in ordinary English, terms that refer to propositions appear in the direct object position of my sentences.

Suppose, however, that I concede that (2) is true. Then I must concede that the antecedent of (4) is true. But I would then deny the consequent of (4). I say that we must attend to guises when we wish to discriminate between rational agents and irrational agents, between rational d-belief and irrational d-belief, and between rational belief and irrational belief. But it does not follow that guises, or proposition-guise pairs, are the objects of belief. To the contrary, it is perfectly consistent to say that guises help determine the rationality of d-belief and belief while maintaining that the objects of belief are propositions. And this is what I hold.

Chalmers admits (section 7) that the question of whether propositions are the objects of credence may be largely terminological. He presents a second objection to a view like SGR at the end of his section 7:

> ". . . a referentialist may suggest that the entities that credences are assigned to are nonreferential, while the referents of 'that'-clauses are referential. This is a somewhat uncomfortable combination, as one can express credences by saying 'My confidence that Tinasky is Hawkins is low' and so on. Perhaps the referentialist will give some special treatment of such sentences, as they do for belief sentences. For example, they might argue that such a sentence expresses the false proposition that p(H) is low, while conveying the true proposition that p(H*) is low. . . . Of course this requires denying the truth of claims that play a highly successful and systematic explanatory role. But such

denials are not foreign to the referentialist."

For the purposes of this argument, let's assume that Foster has uttered 'My confidence that Tinasky is Hawkins is low'. Then we can state Chalmers's argument as follows.

1. If SGR is true, then 'My confidence that Tinasky is Hawkins is low' is false with respect to a context in which Foster is the agent.
2. 'My confidence that Tinasky is Hawkins is low' is not false with respect to a context in which Foster is the agent.
3. Therefore, SGR is not true.

Chalmers apparently thinks that (1) is true because, on SGR, the proposition that Tinasky is Hawkins is identical with the proposition that Tinasky is Tinasky. Further, Chalmers seems to assume that if SGR is true, then Foster's confidence that Tinasky is Tinasky is not low, but high. Chalmers supports premise (2) by appealing to the explanatory success of Subjectivism and Bayesianism.

In reply, I deny (2): 'My confidence that Tinasky is Hawkins is low' is false with respect to a context in which Foster is the agent. But my reasons for denying (2) may not be those that Chalmers expects.

Foster *d-BELs* that Tinasky is Tinasky to a high degree under a "Tinasky is Tinasky" guise. Therefore, according to SGR, he d-believes that Tinasky is Hawkins to a high degree. However, Foster also *d-BELs* that Tinasky is Hawkins to a *low* degree under a "Tinasky is Hawkins" guise. Therefore, he also d-believes that Tinasky is Hawkins to a low degree. So he d-believes that Tinasky is Hawkins to a high degree *and* he d-believes that Tinasky is Hawkins to a low degree. (Notice, therefore, that there is *no function* that assigns to every proposition *the* degree to which Foster d-believes it.)

Now how are these facts related to ordinary English ascriptions to Foster of *confidence* in

the proposition that Tinasky is Hawkins, if SGR is true? Well, it seems that Foster has two confidence*s* (or two levels of confidence, or two degrees of confidence) in the proposition that Tinasky is Hawkins. So I think we should conclude that all of the following attributions are true, if SGR is correct.

> Foster is highly confident that Tinasky is Hawkins.
> Foster has a high degree of confidence that Tinasky is Hawkins.
> Foster is lowly confident that Tinasky is Hawkins.
> Foster has a low degree of confidence that Tinasky is Hawkins.

But what about the following two attributions?

> Foster's confidence that Tinasky is Hawkins is low.
> My confidence that Tinasky is Hawkins is low [relative to a context in which Foster is the agent]

.

The possessive phrases "Foster's confidence" and "My confidence" are equivalent to definite descriptions, such as "*The* confidence that Foster has in the proposition that Tinasky is Hawkins" and "*The* degree of confidence that I have in the proposition that Tinasky is Hawkins". These definite descriptions are *improper* (given the imagined context), for Foster has more than one (degree of) confidence in that proposition. Therefore, the attributions containing these possessive phrases are false. That is why I deny line (2) of Chalmers's argument (on behalf of the advocate of SGR).[6]

Chalmers correctly anticipates that a Referentialist will say that 'My confidence that Tinasky is Hawkins is low' is false with respect to a context in which Foster is the agent. But Chalmers thinks it likely that advocates of SGR will appeal to pragmatics to explain away

---

[6]Many thanks to David Christensen for discussion of the immediately preceding argument from Chalmers, and for suggestions as to how to avoid an error in a reply that I gave in an earlier draft.

intuitions to the contrary. That is, Chalmers seems to assume that advocates of SGR will make the following three claims: (a) There is a function p that assigns to propositions the credence that Foster has in them. (b) There is a proposition H*, distinct from the proposition that Tinasky is Hawkins, such that p(H*) is high and Foster's false utterance of 'My confidence that Tinasky is Hawkins is low' pragmatically conveys the true proposition that p(H*) is high. (c) This latter fact about pragmatics explains the anti-Referentialist intuition that Foster's utterance of 'My confidence that Tinasky is Hawkins is low' is true. I say that an advocate of SGR should reject these claims. He should reject (a) because he should hold that Foster does not have such a credence function: there is no *function* that assigns to each proposition *the* degree to which Foster d-believes it. He should also reject (b) and (c). He should say that there is *nothing true* that Foster pragmatically conveys with his utterance. Foster's utterance is just a plain error. (I think that Referentialists should reject all attempts to appeal to pragmatics to explain away anti-Referentialist intuitions. I give my reasons for rejecting such pragmatic explanations in Braun 1998. I admit that I am here disagreeing with other Referentialists, such as Salmon and Soames, who do tend to appeal to pragmatics.)

Why, according to me, does Foster falsely claim that his confidence that Tinasky is Hawkins is low? Briefly, because he *d-BELs* that Tinasky is Hawkins to a low degree under a "Tinasky is Hawkins" guise. This causes him (given his desires and beliefs about confidence) to utter 'My confidence that Tinasky is Hawkins is low'. So he utters a sentence that expresses a false proposition. Since the proposition that Tinasky is Hawkins is presented to him under two guises, he does not discover that he, in fact, has two degrees of confidence in a single proposition. The proposition that Tinasky is Hawkins is also presented to Foster's auditors

under two guises, and that is why they also have mistaken anti-Referentialist intuitions about Foster's utterance. (More needs to be said, but I will not take the space to do so here. I give a version of this explanation of anti-Referentialist intuitions in Braun 1998.)

I conclude that Chalmers's arguments do not raise serious problems for Referentialism–or at least they do not raise more serious problems for Referentialism than the more familiar objections that I presented in section 1.

8. Chalmers's Positive Proposal

I have thus far used this comment to defend Referentialism from Chalmers's objections. I will now make a few short remarks about his positive proposals.

8.1. Primary Intensions as Guises

Chalmers sometimes says that, on his proposal, the objects of credence are primary intensions (the title of section 9 is "Objects of credence as primary intensions"). But in the end (section 10), it seems that denotations of 'that'-clauses are *enriched propositions*, which are (roughly speaking) pairs of structured primary intensions and structured secondary intensions. On this view, a rational agent can believe two enriched propositions in which the structured primary intensions differ but the structured secondary intensions are the same. Further, a rational agent can believe two enriched propositions in which the structured secondary intension of one is the negation of the structured secondary intension of the other, as long as the structured primary intensions are suitably different. Thus in Chalmers's ultimate theory, structured primary intentions seem to play much the same mediating role that guises play in Guise Referentialism

and Subjectivist Guise Referentialism. I have two comments on this. (1) Given their structural similarities, choosing between Chalmers's ultimate view and Guise Referentialism will partially turn on whether there are mediators that have the sorts of semantic features that Chalmers attributes to structured primary intensions. I doubt that there are such mediators with such semantic features. (2) Chalmers worries that Guise Referentialist theories entail that the objects of credence and belief are distinct. But it is difficult to see how this could be a serious worry about Guise Referentialism and not a serious worry about Chalmers's own ultimate view. Why should we not worry that, on Chalmers's ultimate view, the objects of credence are structured primary intensions while the objects of belief are something else, such as structured secondary intensions or enriched propositions?

8.2. Primary Intensions and Assertions

Chalmers frequently speaks of the probability of an *assertion*. For instance, in the third paragraph of section 3 he says ". . . it is helpful to introduce a framework on which credence can be associated not just with propositions but with *assertions*, construed as utterances of assertive sentences." He also speaks of the primary intension associated with an assertion, as in the third paragraph of section 9: "The set of centered worlds associated with assertions like this is what I have called the *primary intension* of the assertion". The term 'assertion' is commonly used either for *acts* of asserting (speech acts of a certain sort) or the things that get asserted in acts of asserting, namely propositions. Chalmers clearly is using the term for acts of asserting. But this is problematic, because (to put it crudely) there are too few acts of asserting for any given agent. Chalmers wants to assign probabilities to objects in a way that helps with the description of

rational belief. But rational agents believe (and d-believe) much more than they ever express in acts of asserting. So the domain of an agent's credence function cannot be (merely) the set of her acts of asserting. Consider, for instance, the following difficulty: if an agent's credence function assigns a number n to an assertion A, then it must also assign $1-n$ to the negation of A, an assertion of not-A. But agents rarely perform acts of asserting both a sentence and its negation. So the objects in the domain of an agent's credence function should not be (merely) the set of that agent's acts of asserting.

I think that Chalmers needs the things in the domain of the prob function to be something like *sentences*. But these cannot be English sentences because there are too few of these, for reasons having to do with Paderewski cases and with cases of belief that cannot be expressed in English. Perhaps Chalmers could make do with a set of sentences in the *agent's idiolect at a time*. Or perhaps a set of sentences in the agent's Language of Thought. Or perhaps the objects in the domain of his prob function should be Referentialist guises (which may be sentences in a LOT). I will assume from here on that the domain is a set of sentences in an agent's idiolect at a time.

8.3. Does Chalmers's Theory Assign Probabilities to Primary Intensions?

Chalmers says that the objects of credence are primary intensions. So one might expect that in Chalmers's theory, an agent's credence function would assign probabilities to primary intensions. (Chalmers's theory would then resemble David Lewis's theory in "Attitudes *de dicto* and *de se*", which assigns credences to properties.) But in Chalmers's explicit theory, an agent's credence function assigns probabilities to assertions, that is (as I am construing assertions), to

sentences in the idiolect of the agent at a particular time. Chalmers does not explicitly define a function that assigns probability to primary intensions, such as the primary intension expressed by 'Some dogs live in Australia' in my idiolect now.

However, Chalmers almost certainly has in mind the following indirect method for assigning probabilities to primary intensions: let the probability of a primary intension, for an agent at a time, be the probability assigned to a sentence that expresses that primary intension in the agent's idiolect at that time. So if sentence A expresses primary intension PI, then prob(PI)=prob(A). This indirect method for assigning probabilities to primary intensions is strongly suggested by the following sentence, which appears in section 9 shortly before the principle of Plenitude: "And these primary intensions will be associated with different credences, corresponding to the different credences of the sentences". (But see note 8 for worries about this method.)

8.4. Determining the Primary Intension of a Sentence

The primary intension expressed by a sentence (in a thinker's idiolect at a time) is a function from centered worlds to truth-values. Chalmers holds that with each centered world W we can associate a sentence S(W) that describes, partly in the first-person, all of the qualitative facts about W that can be stated in a certain highly restricted, partly phenomenal, vocabulary. Chalmers says that a sentence A in an agent's idiolect is true at a centered world W iff prob(A|S(W))=1, where prob is the agent's credence function. Or, what he thinks is equivalent: A is true at W iff "if S(W) then A" is a priori. The primary intension of A is the function whose value at a centered world W is: truth, if A is true at W, and falsehood otherwise. (So the value of

A's primary intension will be falsehood at centered worlds at which prob(A|S(W)) is less than 1.)

I have two worries about this proposal, neither of which is original.[7] First, I worry about whether a normal human agent has a single *determinate* prob function that will deliver probabilities for Chalmers's world sentences S(W). I strongly suspect that there is no fact about the relevant agent that determines a single function that delivers a definite value for very long, complex sentences in Chalmers's highly restricted vocabulary. I suspect that, for any given normal human agent, there are many, quite different, prob functions that are compatible with the actual mental facts about the agent, and do an equally good job of capturing whatever facts there are about his degrees of belief in Chalmers's impoverished world-sentences, and I suspect these functions will strongly disagree about the probability of A conditional on S(W). If so, then the primary intension of an agent's sentence A will be undefined at many centered worlds.

Chalmers might reply to my worry by saying that there is no more indeterminacy here than there is in more standard Subjectivist (Bayesian) theories that assign credence functions to agents. But I think there is. A Subjectivist can plausibly say that a given agent's degree-of-belief in the sentence 'Some dogs live in Australia' lies in a certain (vague, but) rather narrow range. The indeterminacy here is rather limited. Similarly for many other sentences. But I suspect that for *none* of Chalmers's worldly sentences S(W) is there any fact that makes it determinately the case that a given agent's degree-of-belief in it lies within a narrow range. And therefore the Chalmersian conditional probability for this sentence at a world W, for instance, prob('Some dogs live in Australia'|S(W)), will be highly indeterminate. And so the primary

[7]See Soames (2005, chapter 9) and Byrne and Prior (2004).

intension of ordinary, pedestrian sentences, such as 'Some dogs live in Australia', will be highly indeterminate, on Chalmers's theory.[8]

Second, even if there is a single determinate prob function for a given agent, I have little confidence that it will assign a value of 1 to a significant number of sentences and centered worlds. For instance, assuming that there are facts about me that determine a single prob function for me, I doubt that there is any world-sentence S(W) in Chalmers's highly restricted vocabulary such that $prob_{Braun}$('Some dogs live in Australia'|S(W)) =1. (I am thus skeptical of Chalmers's Scrutability Thesis in section 9, if the vocabulary of S(W) is restricted as Chalmers suggests.) If I am right, then (assuming determinacy) the primary intension of 'Some dogs live in Australia' (in my idiolect now) is a very uninteresting function. And similarly for many, many other sentences in my idiolect. In fact, given the extremely limited vocabulary of S(W), and assuming determinacy, it would not surprise me if 'Some dogs live in Australia' has the same (extremely boring) primary intension in my idiolect as 'Some cats live in New Zealand'.[9]

8.5. Primary Intensions, Truth, and Necessary Truth

Primary intensions are functions from centered worlds to truth values. Centered worlds are n-tuples consisting of a possible world, a designated agent in that world, a designated time in

[8]If this is so, then it threatens my proposal (at the end of subsection 8.3) to identify the credence assigned to a primary intension with the credence assigned to a sentence that expresses that primary intension. The credence that most agents assign to 'Some dogs live in Australia' is fairly determinate. If its (alleged) primary intension is highly indeterminate, then it seems that the credence that such an agent assigns to this primary intension cannot be the same as the credence that she assigns to the sentence.

[9]See Chalmers and Jackson 2001 for arguments to the contrary.

that world, and maybe some other designated objects in that world that play the role of, e.g., individual experiences or demonstrated objects. I shall attend only to the possible world, agent, and time.

We can think of a primary intension as a *relation* between an agent and time, for a primary intension delivers truth at a centered world iff the agent and time of that centered world stand in a certain relation in the possible world of that centered world. Now Chalmers says that primary intensions are among the objects of belief. But the things that we believe are true and false, and contingently true and contingently false, and necessarily true and necessarily false. Primary intensions have none of these features, any more than relations do.

We can suppose that believing a primary intension at a time is a bit like attributing the corresponding relation to oneself and one's time (somewhat as Lewis [1979] views belief as self-attributing a property). We can then give something like a contextual definition for 'true primary intension' when it appears inside a sentence of the form "Agent X believes a true primary intension at time T", as follows: Agent X believes a true primary intension at time T iff X believes a primary intension PI such that, if W is the centered world in which the possible world is the actual world and the designated agent is X and the designated time is T, then PI(W)=Truth. So if I believe the primary intension that 'Some dogs live in Australia' expresses in my idiolect, then I believe a true primary intension now, for that primary intension yields truth when applied to a centered world that contains me, my present time, and the actual (un-centered) world.

That helps us to make sense of believing a true primary intension, but it doesn't help us much with, say, the notion of believing a *necessarily* true primary intension. To make sense of this, we would have to be able to stipulate some meaning for a sentence like "Agent X believes a

primary intension that is true with respect to world W", where W is some *un*-centered world other than the actual world. I am at a loss as to how to go about doing this in a reasonable way.[10]

I suppose that Chalmers could concede this, but maintain that it is harmless. He could claim that primary intensions are in no sense necessarily true or false, but that secondary intensions are. He could then add that secondary intensions are also objects of belief, in some sense. Still, it would be strange to say that primary intensions are objects of belief and credence, and bear probabilities, but are never necessarily true.[11]

---

[10]Soames (2005, 232-236) expresses similar worries about primary intensions and truth.

[11]Many thanks to David Christensen for helpful comments and discussion. Thanks also to David Chalmers for correspondence on his paper.

Bibliography

Braun, David. 1998. "Understanding Belief Reports." *Philosophical Review* 107, 555-595.

Byrne, Alex and Prior, James. 2004. "Bad Intensions." In M. García-Carpintero and J. Macià (eds.) *The Two-Dimensionalist Framework: Foundations and Applications*. Oxford: Oxford University Press.

Chalmers, David. 2006. "Probability and Propositions." Online Philosophy Conference.

Chalmers, David and Jackson, Frank. 2001. "Conceptual Analysis and Reductive Explanation." *Philosophical Review* 110, 351-361.

Kripke, Saul. 1979. "A Puzzle About Belief." In A. Margalit (ed.), *Meaning and Use*, 239-283. Dordrecht: D. Reidel.

Lewis, David. 1979. "Attitudes *De Dicto* and *De Se*." *Philosophical Review* 88, 513-543. Reprinted in David Lewis, 1983, *Philosophical Papers, Volume I*, 133-156, Oxford: Oxford University Press.

Salmon, Nathan. 1989. "Illogical Belief." *Philosophical Perspectives* 3, pp. 243-285.

Salmon, Nathan. 1995. "Being of Two Minds: Belief With Doubt." *Noûs* 29, 1-20.

Soames, Scott. 2002. *Beyond Rigidity*. Oxford: Oxford University Press.

Soames, Scott. 2005. *Reference and Description: the Case Against Two-Dimensionalism*. Princeton, NJ: Princeton University Press.