# *The problem of factives for sense theories*

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## *1. Introduction*

According to Kripke (1980:74–8), descriptivist sense-theories of names are refuted by their predicting necessary truths where in fact we find only contingent ones. Kripke's principal target is *famous-deeds* descriptivism (1980:80), but his objections are equally effective against *psychologized* famous-deeds descriptivism and *theory-laden* descriptivism. Where 'the F' is a famous-deeds description, psychologized famous-deeds descriptivism proposes something like 'the person commonly believed to be the F' as the form of a name's sense. But this doesn't avoid Kripke's point, since typically it is just as contingent that *x* is commonly believed to be the F as it is that *x is* the F. As for theory-laden descriptivism, Kripke attributes to Nozick the observation that if some theory of reference is true, there is a descriptivist theory *T* immune to many epistemic and semantic counterexamples to famous-deeds descriptivism (1980:88, fn. 38). Suppose for some relation *R*, 'NN refers to *x* in virtue of *R*'s holding between NN and *x*' is the true theory of reference. Then *T* says that the sense of a name NN is expressed by the description 'the *x* such that *R*(NN,*x*)'. Since *T* is *a priori*, 'NN is the *x* such that *R*(NN,*x*)' is *a priori*; and we are talking here about the *true T*, so 'wrong referent' problems won't arise. An example of this approach, exploiting the Kripke-Geach historical chain account, is the proposal that the sense of a name NN is captured by 'the person called NN by those from whom

I acquired the name'. But even if this deals with semantic and epistemic problems, modal objections still arise, for it is contingent that Aristotle is called 'Aristotle' by those from whom I acquired the name: in some possible world, there is a Geachian apostolic succession[1] for 'Aristotle' which leads to me, but begins with some *x* other than Aristotle.

   A standard response to Kripke's modal counterexamples is that modal problems are avoided if we use the rigidity operator 'actually' to convert the relevant descriptions into rigid designators. However, this strategy is unpromising (for a survey of objections see Soames 2002:40–43), so in this note I wish to investigate two other proposals which at least initially look to have better prospects for success.

## 2.   *The rigidified names account*

Rather than rigidify descriptions, Gluer and Pagin (2006) suggest that *names* be rigidified. For them, a name expresses a mode of presentation that can present different objects at different possible worlds (they advocate a cluster version of famous-deeds descriptivism, p.532 n.36). But the name itself will behave as a rigid designator *when it occurs within the scope of a modal operator*, because, in effect, it contributes a closely related rigid description to the proposition its containing sentence expresses. For a name NN in the scope of such an operator, this description is 'the thing actually identical to NN', in which 'the' is possibilist.[2] That is, the name contributes 'the *x:* @(*x* = NN)' to logical form.[3] So '◇(Aristotle exists but does

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1.   See Geach (1970:288-9): '...for the use of a word as a proper name there must in the first instance be someone acquainted with the object named...But...the...name...can be handed on from one generation to another...Plato knew Socrates, and Aristotle knew Plato, and Theophrastus knew Aristotle, and so on in apostolic succession down to our own times. That is why we can legitimately use "Socrates" as a name the way we do.'

2.   By *possibilist* 'the' I mean a 'the' which at each world *w* ranges over all possible objects *D*, not just those *x*∈*D* that exist at *w*.

3.   This is not Gluer and Pagin's favored way of formulating their view, but is, as they note, equivalent

not tutor anyone)' is true because the thing actually identical to Aristotle exists at worlds without tutoring anyone, *even if* the name 'Aristotle' expresses a mode of presentation that requires anything it presents to tutor Alexander.

A serious difficulty for this view is raised by *mixed* contexts, where a name occurs within the scope of a modal operator, but also within a context in which non-rigidi-fication appears desirable.[4] For Gluer and Pagin's semantics, mixed contexts that involve factive verbs (*know, discover, establish, prove, realize, verify*, etc.) are espe-cially problematic. For example, the semantics appears to allow for

(1)   $\diamond$(Hesperus has a moon and someone establishes that Hesperus has no moon).

The first 'Hesperus' in logical form is 'the thing that is actually Hesperus', while the second 'Hesperus' will contribute its own sense, since the input to 'establishes' should just be the customary proposition $\rho$, *that Hesperus has a moon* (if I do es-tablish this, it follows that I could have). But at some worlds where Hesperus has a moon, $\rho$ may be about an item which, indeed, has no moon (whichever version of descriptivism the sense of 'Hesperus' conforms to). So (1) should not seem prob-lematic. But of course it does, since there is a strong intuition that (1) implies

(2)   $\diamond$(Hesperus has a moon and Hesperus has no moon)

by the principle $\diamond(p \land q), \Box(q \to r) \vdash \diamond(p \land r)$, where $q \to r$ is the analytic conditional

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to it (*op. cit.*, p. 513, n.6). Their official proposal (513–4) is that in evaluating a formula $\phi$ (of a language without attitude contexts), a special evaluation rule is used for those atomic subformulae of $\phi$ that (i) contain individual constants, and (ii) are within the scope of a modal operator in $\phi$: such an atomic for-mula $Ft_1...t_n$ is true at a world $w$ iff the $n$-tuple consisting of the *actual* values of $t_1...t_n$ in that order is in the extension of $F$ at $w$. This rule breaks the usual connection between $\Box p$'s being true at a world and $p$'s being true at every world when $p$ is non-modal and contains names, so I prefer to trade it for non-obvious logical form differences.

4.   As far as I know, Mark Richard was the first to raise mixed-context problems for certain responses to Kripke's modal objections. See (Richard 1993:246–51).

'if someone establishes that Hesperus has no moon, then Hesperus has no moon'. (2) seems to doom the rigidification-of-names strategy as a response to Kripke.

However, the intuition that (1) entails (2) can perhaps be explained away as involving a scope confusion: we think (2) is entailed because we interpret (1) not following its word-order, but rather with the second 'Hesperus' in an intermediate position outside the scope of 'establishes'.[5] A sentence with this interpretation as its word-order reading is

(3) ◇(Hesperus has a moon and Hesperus is such that someone establishes that it has no moon).

In logical form, both occurrences of 'Hesperus' are 'the thing that is actually Hesperus', so (3) certainly implies (2). But (3) is not (1), and it's only if the *word-order* interpretation of (1) implies (2) that the strategy of rigidifying names produces unpalatable consequences, because only the word-order reading lets the two occurrences of 'Hesperus' have different semantics, thereby producing a truth.

However, it's not plausible that the intuition that (1) implies (2) is the result of confusing (1) with (3). We can force 'Hesperus' to stay in the scope of 'establishes' by enclosing (1)'s 'that'-clause in a noun phrase, thereby creating a scope-island:

(4) ◇(Hesperus has a moon and someone establishes the fact that Hesperus has no moon).

(1)'s word-order reading entails (4), in (4) the second 'Hesperus' is within the scope of 'establishes', and (4) entails (2). [(4) also entails (3), by exportation, but (3) isn't a *reading* of (4), though it can be inferred from it.] Note that we can use 'the fact'

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5. Gluer and Pagin do not discuss mixed contexts with factives, but their discussion of other mixed context examples appeals to scope distinctions (533–4).

in (4) because establishing the fact that Hesperus is Hesperus is as different from establishing the fact that Hesperus is Phosphorus as believing the one identity is from believing the other.

This example is not conclusive, though, for while 'Hesperus' cannot take intermediate position by itself in a reading of (4), the complement term of transitive 'establishes' could: 'the fact that Hesperus has no moon is such that someone establishes it'. I think we have little difficulty in focusing on the word-order reading of (4) and great difficulty, while doing so, in not hearing (2) as a consequence. But for some, a variant of (4) with 'someone verifies the proposition that Hesperus has no moon' may be more convincing. For even if read as 'the proposition that Hesperus has no moon is such that someone verifies it', 'the proposition' should prevent the following 'Hesperus' from being rigidified, if 'establishes' prevents it in (4). Yet this is also short of conclusive; once the proposition-description is out of the scope of 'establishes', perhaps there is a reading with 'Hesperus' beyond *its* scope, 'Hesperus is such that the proposition that it has no moon is such that someone verifies the latter'. I cannot definitively refute the claim that it is ever more *recherché* readings like these we hear when (1) or its cousins strike us as entailing (2), but I think such suggestions have no independent rationale at all, and want to know *why* it is so hard to hear the narrow-scope reading that allegedly doesn't entail (2).

However, a scope-ambiguity claim is not the only way of challenging the objection that (4) implies (2). In the factivity inference 'Someone establishes the fact that Hesperus has no moon, therefore, Hesperus has no moon', what is established must be the very same thing as what is concluded to be the case: there can be no equivocation from one occurrence of 'Hesperus has no moon' to the other. But when we try to infer (2) from (4), we run into a quandary. In (2), the two occurrences of 'Hespe-

rus' must have the same semantics, both of them expressing 'the thing actually identical to Hesperus' in view of being directly in the scope of ◇. But the second occurrence of 'Hesperus' in (2) *cannot* express 'the thing actually identical to Hesperus', because (i) the conjunct of (2) that it occurs in is inferred from the second conjunct in (4); (ii) 'Hesperus' must mean the same in both second conjuncts if the factivity inference mentioned in (i) is to be correct; and (iii) in the second conjunct in (4), 'Hesperus' is not rigidified. So the attempt to derive a contradiction-involving consequence from (4) breaks down.

But this is hardly a *defense* of the strategy of rigidifying names, since it shows only that the rules as stated lead to a dilemma about (2). Perhaps we should say that (2) is ambiguous. There is a reading where both names are rigidified, which yields a contradiction. But there is also a reading, primed by deriving (2) from (4), in which the second occurrence of 'Hesperus' in (2) is not rigidified. Then 'Hesperus has a moon and Hesperus has no moon' as it occurs in (2) is no more a contradiction than is 'Socrates is dead and Socrates is not' when the first occurrence of 'Socrates' refers to Plato's teacher and the second to the Brazilian footballer or Portuguese prime minister. However, this faces two problems. One is that we don't have a *principle* for making an exception to the rule that a name directly within the scope of a modal operator gets rigidified. The other is that, with only one name 'Hesperus' in the lexicon (by contrast with the three names 'Socrates'), there simply *is* no reading of (2) on which it is consistent. So this proposal to defang the derivation of (2) from (4) is unsuccessful.

These objections to rigidifying names are all based on the assumption that a name in a non-modal complement of an attitude verb does not get rigidified, even if the attitude verb is under a modal operator in the wider context. What happens if in-

stead we say that any name occurring within the scope of a modal operator $O$ gets rigidified, no matter what its deeper embeddings in the scope of $O$? For then the references of the two occurrences of 'Hesperus' in (1) and (4) don't diverge, so (1) and (4) are false.

At least, there is no divergence of reference if the semantic function of the names in (1) and (4) is simply to determine an object; both will determine the thing actually identical to Hesperus. But this view about names in attitude contexts undercuts the whole point of the rigidification hypothesis. For it will follow that

(5)   Necessarily, anyone who believes Hesperus is Hesperus believes Hesperus is Phosphorus.

And defeating modal objections at the price of (5) is not an accomplishment if we are trying to defend theories whose rejection of (5) is one of their crucial features.

If the second occurrence of 'Hesperus' in, say, (1), is to be rigidified, we must therefore also require its conceptual content, *the thing actually identical to Hesperus*, to play a role in determining the proposition whose truth, according to (1), is established. This content is different from *the thing actually identical to Phosphorus* granted that 'Hesperus' and 'Phosphorus' have different senses; so (5) will not follow. But what exactly is involved in *the thing actually identical to Hesperus* partly determining a constituent of the proposition established? There is no plausible candidate for this other than *being* a constituent of the proposition. But we are considering the content-proposition of an attitude held in a non-actual world $w$ that supposedly verifies the conjunction in (1), and since this proposition contains no modal operators, the constituent *actually* is redundant: *actually identical to Hesperus* is equivalent to *identical to Hesperus*.[6] So it is the denotation of 'Hesperus' in $w$ that is

6.   The proposition in question is the one its establisher in $w$ might give voice to in $w$ with 'the thing

established to lack a moon in *w*, while the actual denotation of 'Hesperus' is said to have a moon in *w*. This is perfectly consistent if 'Hesperus' is non-rigid, so inferring (2) by factivity of 'establishes' brings us back to the non-existent reading of (2) on which it is consistent.

## 3. Two-dimensionalism

Mixed-context examples with factives pose problems for any view on which names in modal contexts behave in a special way, such as the 'two-dimensional' account of meaning developed by Chalmers in a series of papers (e.g., Chalmers 2002a,b; 2006, 2008).[7] According to this account, a sentence *S* may be associated with two different types of sense, *subjunctive* and *epistemic*. The subjunctive sense of *S* is a function from *metaphysically* possible worlds (for short, 'worlds') to truth-values, while the epistemic sense of *S* is a function from *epistemically* possible worlds (for short, 'scenarios') to truth-values. A scenario, in turn, is a complete way things might have *turned out* to be, constrained only by what is known *a priori* (Chalmers 2006:75–89). For Chalmers, Kripke's modal examples show that the subjunctive sense of a name is a constant function from worlds to individuals, but these examples are irrelevant to epistemic sense, which is a possibly non-constant function from scenarios to individuals that reflects the 'inferential role' of the name (2008:592–3).

Let us say that a *pure* epistemic operator *O* is one such that for any sentences $S_1$ and $S_2$, if $S_1$ and $S_2$ have the same epistemic intensions, then the operation expressed by *O* produces the same output given the pair of $S_1$'s subjunctive and epistemic in-

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actually identical to Hesperus has no moon'. Using the *store* (↑) and *restore* (↓) operators of (Fine 1977), a first approximation to a logical form for (1) on this understanding of it would be: ◇↑{(the x: @(x = Hesperus))[x has a moon] & ∃y(y establishes (the x: ↓(x = Hesperus))[x has no moon])}. The operators are obligatory so long as there is to be an *actually* in the content of what is established.

7.   Ironically, the mixed-context examples in (Richard 1993) were given as part of a critique of the two-dimensionalist account of the contingent *a priori* in (Forbes 1989).

tensions as it does given the pair of $S_2$'s subjunctive and epistemic intensions. Correspondingly, a *pure subjunctive* operator does not distinguish sentences with the same subjunctive intensions, even when their epistemic intensions are different. Kripke's modal operators are pure subjunctive operators.

Simple ways of instantiating Chalmers' framework are refuted by mixed context examples with factives, such as (1) and (4). Suppose that the inferential role of a name is captured by a famous deeds description, and that attitude verbs are pure epistemic operators. Then nothing rules out a set-up in which the two occurrences of 'Hesperus' in (1) designate different things, with the result that (1) is true. The dominant $\diamond$ in (1) is sensitive only to the subjunctive intension of the conjunction that is its scope. So we may pick a world $w$ where Venus has a moon but is not identical to the heavenly body which appears in region $r$ of the evening sky, and in which some astronomer $a$ establishes that the heavenly body which appears in region $r$ of the evening sky has no moon. If the epistemic intension of 'Hesperus' is precisely the scenario-to-object function expressed by 'the heavenly body which appears in region $r$ of the evening sky', the subjunctive sense of 'establishes that Hesperus has no moon' is true of $a$ at $w$. So (1) is true. But if our discussion of rigidifying names in §2 showed this to be unacceptable, it remains so here.

Chalmers is therefore right to take a more complicated view of the semantics of names and attitude verbs. Of the three types of descriptivism we distinguished earlier, he favors the theory-laden one (in a version based on apostolic succession) over the other two. However, this is not to say he endorses it, for the descriptions it gives rise to may be no more than *approximations* of the epistemic sense of a name, subject to counterexample; perhaps a name's inferential role can't be captured by any description (2002a:619,641; 2008:593). Secondly, Chalmers does not think that

attitude verbs are pure epistemic operators. Rather, he holds that such verbs are sensitive both to the subjunctive and the epistemic senses of their complements in the style of 'hidden-indexical' semantics (2002b:622–4; 2008:597). To believe that Hesperus is a planet is to believe the subjunctive sense *under* the *so-labelled* epistemic sense, that is, to believe that Hesperus is a planet, *as such*.[8]

However, these refinements do not avoid the problem of mixed contexts with factives. First, even if attitude verbs aren't pure epistemic operators, there are such operators, and some are factive: 'it is epistemically necessary that' and 'it is *a priori* true that' would be examples. Then

(6)   ◇(Hesperus does not appear in the evening and it is *a priori* true that Hesperus appears in the evening)

will present the same difficulty as (1) for a famous-deeds descriptivist. And we can also generate this difficulty for an inferential role theorist who holds that a theory-laden description based on apostolic succession offers the best approximation to a name's epistemic sense. To be precise, an apostolic succession for a name is a sequence of events which begins with an initial baptism of an object and continues with the name being passed on from speaker to speaker; and each speaker acquires it with the deferential intention (Kripke 1980:96) to preserve its reference. A *fully-reference-preserving* apostolic succession is one in which the object each speaker in the succession uses the name for is the one that was initially baptized with the name. Then Chalmers' view implies the truth of

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8.   I have formulated Chalmers' view as a Russellian variant of the neo-Fregean hidden-indexical semantics of (Forbes 1990, 1996). In these terms, establishing that Hesperus = Hesperus, as such, would involve, say, confirming the existence of Hesperus and then providing a one-line proof appealing to =I. This also establishes that Hesperus = Phosphorus, but not in the usual sense of establishing it *as such*, which requires more astronomy.

(7)  ◇[(i) there is a fully-reference-preserving apostolic succession for my name 'Hesperus' and the object whose initial baptism begins this succession *isn't* Hesperus, and, (ii) it's *a priori* true that if there is an object whose initial baptism begins a fully-reference-preserving apostolic succession for my name 'Hesperus', then Hesperus is that object].

As noted at the start, for any ordinary name, it's contingent which object it is whose initial baptism with that name starts the apostolic succession that leads to me. So there are worlds where (i) holds. And (ii), by Chalmers lights, is at least actually true, since 'it is *a priori* true that' is purely epistemic, so is sensitive only to the *epistemic* intension of its complement. The latter is *a priori* because the intension of 'Hesperus' is not merely *approximated* by the description 'the object whose initial baptism…' in (7); rather, we have excluded the possibility of counterexample by decreeing the succession to be fully reference-preserving. (7) is then true given just that (7-ii)'s *subjunctive* intension would be true even if something other than Hesperus had been baptized 'Hesperus' at the start of the succession leading to my acquiring the name (that's why the epistemic sense is non-rigid). The subjunctive intensions of (7-i) and (7-ii) then conjoin, as presumably do the epistemic intensions, and the pair is input to ◇, which is sensitive only to the subjunctive intension.

One might simply conclude that 'it is *a priori* true' is not purely epistemic, though this would be a serious problem for Chalmers' overall project.[9] In any event, given Chalmers' view that attitude verbs are not purely epistemic, we can get another example of the unpalatable consequences of his two-dimensionalism by in effect inverting (1). We use 'it is epistemically possible that' ('E$_\diamond$') as the main operator, assuming it is purely epistemic (it's hard to see why 'E$_\diamond$[Hesperus ≠ Phosphorus]' is true if not). 'E$_\diamond$' can also be read 'it might have turned out that'. Then we have:

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9.  See his discussion of the 'golden triangle' of meaning, reason and modality (2006:55–6).

(8)   E$_\diamond$[Hesperus isn't Phosphorus and someone establishes that Hesperus is Phosphorus (as such)].

Since there is no way the conjunction in (8) might have turned out to be true, (8) itself is false. But by Chalmers' lights, (8) is potentially true. There are scenarios in which Hesperus isn't Phosphorus, which means that the names denote different things in those scenarios. So if it is the *subjunctive* senses of names that determine the content-proposition of an attitude ascription, at least one of the two names in (8) denotes differently in its two occurrences. This could allow the whole conjunction in (8) to be true in some scenarios, depending on the account of the epistemic intension of an ascription of an attitude to a subjunctive intension under an epistemic intension. What is clear is that because of the reference-divergence, Chalmers cannot give the obviously correct account of why (8) is false, that the second conjunct of the embedded conjunction entails something the first conjunct contradicts.

This objection fails if the subjunctive intensions expressed by the names in the attitude ascription *change* within the scope of 'E$_\diamond$'. If we think of a scenario $\sigma$ verifying the first conjunct in (8) as being actual, then arguably the second 'Hesperus' and 'Phosphorus' become rigid designators of, respectively, whatever the first 'Hesperus' and 'Phosphorus' denote in $\sigma$. This means that the second conjunct is false in $\sigma$, the desired result. Nor is this wildly *ad hoc*. If it's epistemically possible that Hesperus isn't Phosphorus, then surely it is also true that

(9)   E$_\diamond$($\diamond$(Hesperus $\neq$ Phosphorus)).

Since 'Hesperus $\neq$ Phosphorus' is subjunctively impossible, (9) might be thought to show that 'E$_\diamond$' has the power to change the subjunctive intensions of names.

But a judgement of epistemic possibility is at bottom a *consistency* claim: in any context $c$, there is some body of knowledge $K_c$ that is given, and a statement $\mathsf{E}_\diamond p$ is true in $c$ iff $p$ is consistent with $K_c$ (see further DeRose 1991). If we introduce scenarios as maximal consistent ways things might have turned out, a scenario consistent with $K_c$ can be said to be *admissible* in $c$, and then $\mathsf{E}_\diamond p$ is true in $c$ iff $p$ is an *element* of some scenario admissible in $c$. So '$\mathsf{E}_\diamond$(Hesperus isn't Phosphorus)' is true in one of Chalmers' contexts, where only *a priori* knowledge is given, iff the proposition that Hesperus isn't Phosphorus is an element of some scenario that's *a priori* consistent. But the proposition $\rho$ in question is the standard subjunctive one, not some special 'epistemic' one. $\rho$'s being an *element* of a scenario $\sigma$ is the basic notion, not that of its being *verified* by $\sigma$, and so there is no need for a recursive definition of 'verified by $\sigma$' on which names denote and '=' means identity. *A fortiori* there is no need to postulate non-equivalent senses for the two names in order to satisfy (9). (9) simply means that the subjunctive possibility of the (necessarily false) subjunctive proposition that Hesperus is distinct from Phosphorus is consistent with what's known. It is also this familiar subjunctive proposition that figures twice over in (8). So (8) still presents a severe difficulty for two-dimensionalism.[10]

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