Analyticity and direct reference

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1. Three constraints on a theory of analyticity

[C1] Ordinary proper names are not indexicals.

[C2] Ordinary proper names are directly referential, so that any two names with the same reference also have the same semantic content.

[C3] "Hesperus is Phosphorus" (like most other sentences involving distinct but coreferential names) is not analytic.

Gill's theory is not committed to [C1-3]; but she holds all three, and they can be used to motivate a theory like hers.

2. Reference determiners & two definitions of analyticity

If [C1-3] are true, then we must identity some analyticity-relevant property other than character and content which differs between "Hesperus" and "Phosphorus." On Gill's view this is the property of having a certain reference determiner.

An example: the reference determiners for "Hesperus" and "Phosphorus."

We can think of reference determiners for names as functions from contexts of introduction to properties— properties which are instantiated by an object iff that object is the referent of the name relative to that context of introduction.

This provides the basis for Gill's Modal Definition of analyticity:

> *Modal Definition*: S is true in virtue of meaning iff for all pairs of context of introduction and context of utterance, the proposition expressed by S with respect to those contexts is true in the context of evaluation.

Why the Modal Definition seems to deliver the result required by [C3].

The Modal Definition is only an approximation of Gill's official theory, which is stated in terms of more fine-grained relations of containment and exclusion between reference determiners. Gill provides a necessary condition for containment, and a sufficient condition. The necessary condition is the *Containment Principle*:

> If the reference determiner for E contains the reference determiner for F, then, for all x, if x satisfies E with respect to a pair of a context of introduction and context of utterance, then x satisfies F with respect to that pair.

Gill also says that identity of reference determiner is a special case of containment — which indicates that identity of reference determiner is sufficient for containment:

> [C4] If the reference determiner for e_1= the reference determiner for e_2, then the reference determiner for e_1 contains the reference determiner for e_2.

How might we define analyticity in terms of containment? The details of Gill's theory are interesting and important; but for our purposes we can work with a two theses which are implied by the theory:

> [C5] A monadic predication of the form ⌜n is F⌝ is analytic iff the reference determiner for ⌜n⌝ contains the reference determiner for ⌜F⌝.

> [C6] A simple identity sentence ⌜n is m⌝ is analytic iff the reference determiner for ⌜n⌝ contains the reference determiner for ⌜m⌝.

My aim will be explore some consequences of and challenges to the theory constituted by theses [C1-6].

3. Reference determiners for names introduced by demonstration

Let's first explore the reference determiners for names in a bit more detail. Suppose that one evening someone introduced the name 'Hesperus' by saying (or thinking to himself)

> Hesperus is *that* (pointing at the brightest object visible in the evening sky).

Given that this is the way that 'Hesperus' was introduced, how should we think about its reference determiner?

A first take: the reference determiner is something like the the function from contexts of introduction to properties corresponding to the open sentence

[Sensitive] x is the brightest object in the sky visible from the location of c_i at the time of c_i which the speaker of c_i is demonstrating at the time of c_i in the world of c_i

Problem: if "Phosphorus" is also introduced by demonstrative, in a way that parallels the introduction of "Hesperus" — except, of course, that the context of introduction was in the morning — the reference determiner for "Phosphorus" will also be [Sensitive]. But then by [C4] we know that the reference determiner for each contains the reference determiner for the other and by [C6], it follows that "Hesperus is Phosphorus" is analytic, which contradicts [C3].

Second take: we should put some constraints on what the time of introduction for "Hesperus" should be, and drop [Sensitive] in favor of something like

[Not Quite So Sensitive] x is the brightest object in the **evening** sky visible from the location of c_i at the time of c_i which the speaker of c_i is demonstrating at the time of c_i in the world of c_i

Problem: this modification does not really avoid the fundamental problems with [Sensitive]. Suppose that, the night after "Hesperus" was introduced, a rival astronomer goes out and sees a bright object in the evening sky, which he dubs "Twinkle." Now suppose that the next day our two astronomers get together and consider the sentence

Hesperus is Twinkle.

If we are sure that [C3] is true, then we should be sure that this sentence is synthetic. But nothing blocks "Twinkle" from sharing, with "Hesperus," [Not Quite So Sensitive] as its reference determiner. But then, as above, by [C4] and [C6] it follows that

[O1] "Hesperus is Twinkle" is analytic.

which looks just as bad as denying [C3].

A third take: To block the derivation of [O1], we could add to the reference determiner for "Hesperus" a name for the date on which the name was introduced. That is, we could move from [Not Quite So Sensitive] to

[Even Less Sensitive] x is the brightest object in the evening sky visible from the location of c_i **on April 21, 1845** which the speaker of c_i is demonstrating **on April 21, 1845** in the world of c_i

Problem: the example of "Twinkle" could be varied so that the rival astronomer's venture took place on the same night as that of Mr. X, which would restore the identity of the reference determiners of the two names.

The problem with the candidate reference determiners we've considered so far is that they are all "shareable" — they are all such that distinct names can, in the same world, both have that reference determiner. This suggests that we should look for *exclusive* reference determiners, which are such that it is impossible for distinct names in a world to share that reference determiner. Two exclusive reference determiners for "Hesperus" might be

> [Exclusive1] x is the brightest object in the sky visible from the northeast corner of Trafalgar Square in London at 9:02 p.m on April 21, 1845 in the world of c_i

> [Exclusive2] x is the brightest object in the sky at the location of Mr. X at 9:02 p.m on April 21, 1845 in the world of c_i

Problem: Consider the predicates

> x is the brightest object in the sky visible from the northeast corner of Trafalgar Square in London at 9:02 p.m on April 21, 1845.

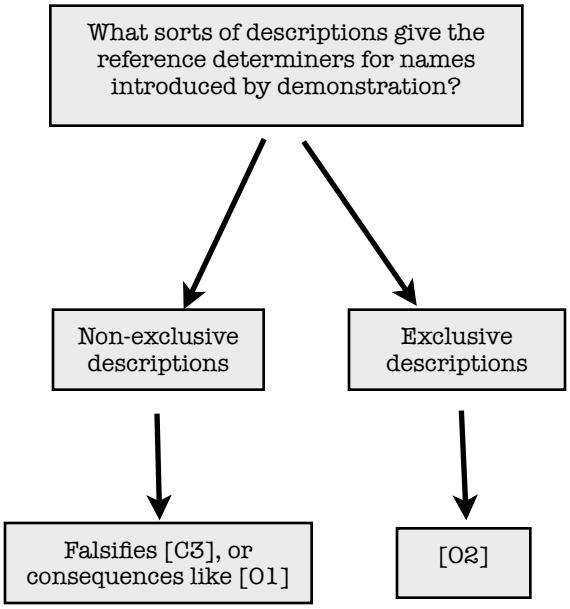
> x is the brightest object in the sky at the location of Mr. X at 9:02 p.m on April 21, 1845.

It seems that the reference determiners for these predicates will be contained by, respectively, [Exclusive1] and [Exclusive2]. But this, given [C5], entails that

> [O2] One of the following is analytic:
>
> "Hesperus was the brightest object in the sky visible from the northeast corner of Trafalgar Square in London at 9:02 p.m on April 21, 1845."
>
> "Hesperus was the brightest object in the sky at the location of Mr. X at 9:02 p.m on April 21, 1845."

But this seems, on the face of it, implausible. Could these claims about the history of Hesperus' location — and about the atmospheric conditions in London on a certain date, and about the life and times of Mr. X — really be true in virtue of meaning?

The dilemma developed in this section might be presented like this:



3.1. Revising the definition of analyticity

Let's suppose, to fix ideas, that we opt for [Sensitive], so that "Hesperus" and "Phosphorus" have the same reference determiner. To avoid falsifying [C3] we can distinguish two interpretations of the Modal Definition and Containment Principle:

> *Weak Modal Definition*
>
> S is analytic iff for any context of introduction c_i, and any context of utterance c_u, if every term in S was introduced in c_i, then S is true in c_u.
>
> *Strong Modal Definition*
>
> S is analytic iff for any contexts of introduction c_{i1}, c_{i2}, ... c_{in} and any context of utterance c_u, if the terms in S were introduced in, respectively, c_{i1}, c_{i2}, ... c_{in}, then S is true in c_u.

Presumably, the strong Modal Definition is what Gill had in mind all along.

As with the Modal Definition, we can distinguish strong and weak versions of the Containment Principle:

> *Weak Containment Principle*
>
> If the reference determiner for e_1 contains the reference determiner for e_2, then for any context of introduction c_i and context of utterance c_u, $\forall$x if x satisfies e_1 relative to $< c_i, c_u >$ then x satisfies e_2 relative to $< c_i, c_u >$.

Strong Containment Principle

> If the reference determiner for e_1 contains the reference determiner for e_2, then for any contexts of introduction c_{i1}, c_{i2} and context of utterance c_u, $\forall$x if x satisfies e_1 relative to $< c_{i1}, c_u >$ then x satisfies e_2 relative to $< c_{i2}, c_u >$.

Given thesis [C4], that identity is necessary for containment, Gill must have the Weak Containment Principle in mind.

The problem is that if we understand the Modal Definition as the strong Modal Definition, and the Containment Principle as the Weak Containment Principle — and hold fixed [C4] — then Gill's two characterizations of analyticity seem to give different results for "Hesperus is Phosphorus."

Given that we want to avoid falsifying [C3], the right move seems to be to simply give up [C4] and adopt the Strong Modal Definition and Strong Containment Principle and thereby avoid consequences like [O1].

Problem: this threatens another of the claims about analyticity Gill wants to preserve: the claim that "Cassius Clay is Mohammed Ali" is analytic, if the name "Mohammed Ali" was introduced with the reference determiner

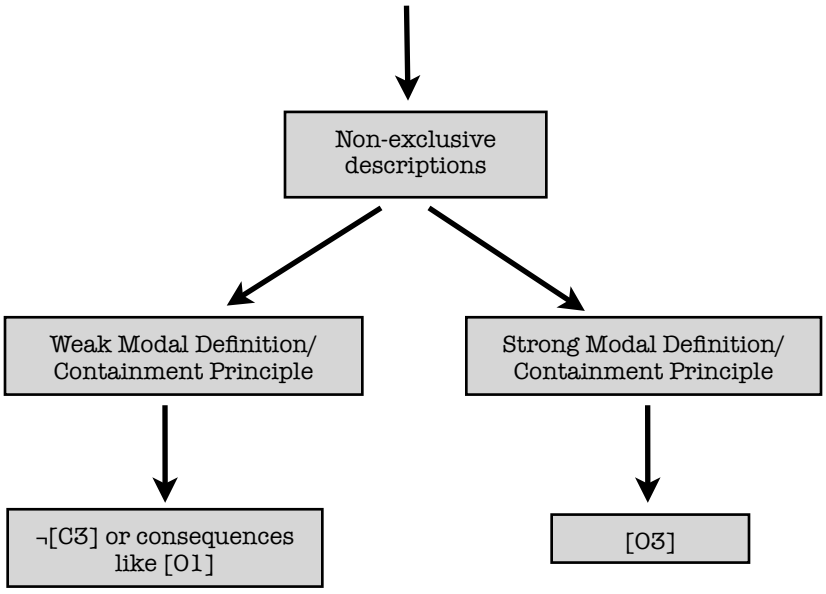
> x is named by "Cassius Clay" in c_i.

Let's imagine a world w in which Cassius Clay is named "Cassius Clay" — and someone else — let's call him "Bob" — is also named "Cassius Clay." Now imagine that the above metalinguistic condition is indeed the reference determiner for "Mohammed Ali", and that, as should be consistent with this, this name is introduced in w to stand for Bob. Now suppose that I am acquainted in w with Bob, whom I know only under the name "Muhammed Ali", and that in w I know Cassius Clay — the Cassius Clay who was actually a great boxer — under the name "Cassius Clay." I might come to suspect that they are the same person, and utter the sentence "Cassius Clay is Mohammed Ali." This would be false out of my mouth — even though I was using the names with the appropriate reference determiners. But if this can happen, then by either the Strong Modal Definition or the conjunction of the Strong Containment Principle with [C6], it follows that

> [O3] "Cassius Clay is Mohammed Ali" is synthetic.

The same will go for other stipulative definitions.

The discuss of this section has, in effect, complicated the lower left corner of our original dilemma:



3.2. Exclusive descriptions & intuitions about analyticity

The problem with exclusive reference determiners was that they made sentences like the following analytic:

> [1a] Hesperus was the brightest object in the sky visible from the northeast corner of Trafalgar Square in London at 9:02 p.m on April 21, 1845.
>
> [1b] Hesperus was the brightest object in the sky at the location of Mr. X at 9:02 p.m on April 21, 1845.

We can press this further. The following conditionals also look analytic:

> [2a] If Hesperus was the brightest object in the sky visible from the northeast corner of Trafalgar Square in London at 9:02 p.m on April 21, 1845, then an object was visible in the sky in London at 9:02 p.m on April 21, 1845.
>
> [2b] If Hesperus was the brightest object in the sky at the location of Mr. X at 9:02 p.m on April 21, 1845, then Mr. X existed on April 21, 1845.

But then the following are analytic consequences of analytic sentences:

> [3a] An object was visible in the sky in London at 9:02 p.m on April 21, 1845.
>
> [3b] Mr. X existed on April 21, 1845.

But [3a-b] are, respectively, meteorological and biographical claims. How could these possibly be true in virtue of meaning — or, even more surprisingly, true in virtue of the meaning of a name for Venus?

Reply: these are only pseudo-analytic.

Fair enough. But the following will be strictly analytic:

> [4a] If Hesperus exists, then an object was visible in the sky in London at 9:02 p.m on April 21, 1845.
>
> [4b] If Hesperus exists, then Mr. X existed on April 21, 1845.

Are these results so objectionable? One might argue that they are not, as follows:

> Look, your objections to various versions of Gill's view all turn on assumptions about what is and what is not analytic. But how do you know that [4a-b] are not analytic? You might think that you know this on the grounds that analytic sentences must be necessary and a priori. But the whole point of Gill's theory is to dissociate analyticity from these notions. So your objections are a bit like those of someone who objects to Kripke's claims about water and H2O on the grounds that the chemical structure of water is not knowable a priori — they miss the point.

A worry about this line of defense: we don't have enough of a grip on the notion of "truth in virtue of meaning," once ties to a prioricity and necessity are severed, to make a principled choice of reference determiners.

4. Tokens, types, & Paderewski

Suppose that Peter, in Kripke's example, considers the sentence

> Paderewski is Paderewski.

It seems plain — almost as plain as in the case of "Hesperus is Phosphorus," I think — that this sentence, out of Peter's mouth, is synthetic. But it looks like this sentence will come out analytic for just the same reasons that "Hesperus is Hesperus" does. Hence we seem to be stuck with the consequence that

> [O4] "Paderewski is Paderewski" is analytic out of Peter's mouth.

This consequence can be avoided if we pay attention to a distinction between two ways in which the Strong Modal Definition can be interpreted. (Analogous remarks would apply to the Strong Containment Principle.) Consider the following two theses:

> *Strong Modal Definition - Type Version*
>
> S is analytic iff for any contexts of introduction c_{i1}, c_{i2}, ... c_{in} and any context of utterance c_u, if the expression types in S were introduced in, respectively, c_{i1}, c_{i2}, ... c_{in}, then S is true in c_u.

Strong Modal Definition - Token Version

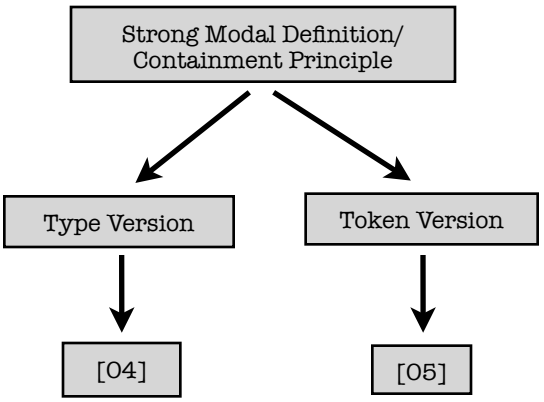
> S is analytic iff for any contexts of introduction c_{i1}, c_{i2}, ... c_{in} and any context of utterance c_u, if the expression tokens in S were introduced in, respectively, c_{i1}, c_{i2}, ... c_{in}, then S is true in c_u.

If we adopt the Token Version, we are free to evaluate "Paderewski is Paderewski" while considering each token of the name as having been introduced in a different context, which gives us a way to avoid [O4].

But there is a worry that this goes too far. If we treat our "Paderewski" sentence in just the way we treat sentences containing tokens of distinct name-types which happen to share a reference determiner, then it is hard to see why we should not do the same with "Hesperus is Hesperus." But that leads to the unwelcome result that

> [O5] "Hesperus is Hesperus" is synthetic.

The dilemma looks like this:



5. Are mathematical truths analytic?

The motivation for the move from the Modal Definition of analyticity to a definition in terms of containment: the problem of the collapse of analyticity into necessity, an instance of which is the fact that the Modal Definition trivially entails that all mathematical truths are analytic.

Problem: any substantive definition of containment will run into the opposite problem, and will trivially entail that all mathematical identities are synthetic, so long as the following plausible claims are true:

[i] If an identity sentence ⌜n=m⌝ is analytic, so is ⌜m=n⌝

[ii] In any non-trivial mathematical identity ⌜n=m⌝, the reference determiner of ⌜n⌝ ≠ the reference determiner for ⌜m⌝.

[iii] For any two reference determiners r1 and r2, if r1 contains r2 & r1≠r2, then ¬(r2 contains r1)

From [ii] and [iii] it follows that for any non-trivial mathematical identity ⌜n=m⌝, at least one of the reference determiners for ⌜n⌝ and ⌜m⌝ does not contain the other. Given [C6], this entails that at least one of ⌜n=m⌝ and ⌜m=n⌝ is synthetic. And given [i], this entails that both are. So if Gill wants to avoid the result that all mathematical identities are synthetic, she must deny one of [i]-[iii].