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INTENTIONALITY

0. Introduction

I shall begin with a sketchy historical introduction to the topic, which will help bring into focus some of the pressing issues for philosophy in the 21st century.

0.1 Brentano's Problem

"Intentionality" as it is typically used in analytic philosophy, meaning, roughly *representation* or 'aboutness', derives from the work of Franz Brentano. Brentano (Brentano 1874, quoted in Chisholm, 1967) wrote:

Every mental phenomenon is characterised by what the scholastics of the Middle Ages called the intentional (and also mental) inexistence of an object, and what we would call, although not in entirely unambiguous terms, the reference to a content, a direction upon an object (by which we are not to understand a reality ..), or an immanent objectivity. Each one includes something as an object in itself, although not always in the same way. In presentation something is presented, in judgement something is affirmed or denied, in love [something is] loved, in hate [something] is hated in desire something is desired etc..

Thus for Brentano mental states are essentially related to certain kinds of objects or contents that have "intentional inexistence" within the states. These came to be called "intentional objects". Brentano was particularly concerned with the problem of how we can represent things that don't exist outside of the mind, such as unicorns. His original idea was that if one thinks about a unicorn, then one's thought has an intentional object that does exist. The object is, not, however, a concrete inhabitant of external reality, but an ephemeral entity, existing in the mind only.

Brentano held that the objects of thought and experience were always such intentional entities. Thus if one is thinking about Paris, the immediate object of one's thought is an intentional object rather than a city. One's thought is true if there is a match of the right kind between the properties of the intentional object and those of the real object. An obvious problem with this view is that it offers no account of what determines the real object of thought (Paris), and hence leaves the nature of intentionality mysterious. Brentano himself came to realise this and abandoned the doctrine.

Brentano's problem remains with us, and much of subsequent philosophy of mind is, in one or way another, concerned with it. When we think about a real object, such as Paris, it seems that the object of our thought is that real object, the city, with all its lights. Moreover, it seems that a mental state's capacity to relate in this way to real objects is important to the role that they play in the explanation of action. Suppose that Spike wants to go to Paris and believes that the best way of getting to Paris is by train. So Spike takes the train to Paris. It looks as though an important part of the explanation of why Spike ended up physically located in Paris is the fact that his desire and belief involved a concept that has that city as its object. So it looks as though intentionality must involve a real relation among real-world objects

When we consider empty concepts, however, exactly the reverse conclusion seems tempting. Suppose that Angel hears of a fabulously wealthy city in South America called "El Argentino". He forms the desire to visit El Argentino and he comes to believe that the best way to get to El Argentino requires taking a ship to Mexico. He boards the ship and ends up in Mexico. It looks as though part of the explanation of why Angel acted as he did is that he had the specified desire and belief, featuring the concept that he associates with the expression "El Argentino" (his "El Argentino" concept). In this case, it looks as though the concept plays a role in explaining Angel's actions, even though it has no object. Moreover, it looks as though its possession or lack of a real-world object is irrelevant to that explanatory role. Angel would have acted as he did if El Argentino had existed and his beliefs had been true. Or so it would seem, at first blush.

I will return to Brentano's problem shortly. First I will introduce a second problem that is interwoven with it, a problem brought into focus by Gottlob Frege.

0.2 Frege's Problem

Frege propounded a powerful and sophisticated theory of representation. His primary interest was in the development of formal languages for the purposes of mathematics and science, and his ideas about representation apply primarily to them. In his view, natural languages are flawed representational systems, not of much independent interest. However, his ideas remain central in current debates about representation.

The notion at the core of Frege's theory was that of reference. The reference of an expression

is what it contributes to the truth value of sentences in which it appears. Reference is a real relation between an expression and an object, the expression's referent. If a refers to b, then both a and b exist. The referent of a singular term is what one would ordinarily think the term stands for. For example, Venus is the referent of the term "Venus" and also of "Hesperus" and "Phosphorus". The referent of a sentence is its truth value and predicative expressions refer to functions from objects to truth values.

Since an expression's referent is what it contributes towards determining the truth values of sentences, reference is governed by principle (P):

(P) Co-referring expressions may be inter-substituted in any sentence without altering the truth value of that sentence.

For example, given that "Hesperus" and "Phosphorus" refer to the same thing, these terms ought to be inter-substitutable in any sentence without altering its truth value. Linguistic contexts where (P) fails are typically called "referentially opaque".

(P) appears to be correct for many cases. But it appears to fail for propositional attitude reports ("PARs"), such as (1a) and (b):

- (1) a. Spike believes that Hesperus is a planet
- b. Spike believes that Phosphorus is a planet

It was in part to address this problem that Frege introduced another kind of content: sense. The sense of an expression is supposed to be a 'mode of presentation' of its referent, a way the referent is presented in thought. Senses are objective, mind-independent objects. But our minds can grasp them. We understand an expression when we associate the right sense with it. Sense was also supposed to account for the cognitive properties of an expression: "Hesperus is Hesperus" and "Hesperus is Phosphorus" differ in their cognitive properties because they have different senses. Further, sense was supposed to contribute to the explanation of reference: an expression has its particular reference via its associated sense. And sense determines reference, in that if two expressions have the same sense, then they have the same reference.

Frege responded to the apparent violation of (P) by PARs by proposing that expressions in their content sentences (the p clauses in 'a believes/hopes...that p') refer to their senses, instead of their normal referents. Thus "Phosphorus is a planet" in (1b) refers to its sense: the Fregean thought that Phosphorus is a planet. In line with this, Frege also held that the objects of propositional attitudes are themselves Fregean thoughts. To believe that Phosphorus is a planet is to stand in the appropriate doxastic relation to the thought that Phosphorus is a planet. In grasping the thought, one thinks about the planet.

It is natural to think that sense offers an appealing solution to Brentano's problem. Frege's own remarks on this topic, however, are somewhat cryptic. He certainly allowed that expressions

can have sense and lack reference, for he explicitly claims this in various places, for example: "The sentence 'Odysseus was set ashore at Ithaca while sound asleep' obviously has a sense" (Frege 1892 reprinted in Geach and Black 1952 p. 62). Moreover, he held that the identity and nature of a term's sense was independent of the existence of its reference, since he goes on to say "The thought remains the same whether 'Odysseus' means [i.e. refers to] something or not".

However, whenever he discusses the matter, Frege focuses on fiction. And the kind of thoughts we have while indulging in fiction is of no relevance to Frege's concerns with the development of formal systems. If a term in a sentence lacks a referent, then, according to Frege, the whole sentence must lack a referent, hence cannot be true or false. But thoughts that are not true or false can play no role in serious theorising. In Frege's view, logic could not apply to them.

Frege's attitude to empty expressions occurring in serious uses, such as "the least rapidly convergent series", is revealing. His view was that you must arbitrarily stipulate a referent for such expressions (Geach and Black 1952 p. 33). But this is very problematic. There are various referents one might choose that are all the same from a logical point of view. Whichever one you pick will have its own properties, and this will lead to sentences getting the wrong truth values. Suppose, for example, that the chosen object is the empty set. "There is no such thing as the least rapidly convergent series" then comes out false, rather than true. It is possible to stipulate semantic rules to avoid this sort of result. But these stipulations tend to be ad hoc and counter-intuitive, and it is far from clear that any adequate selection of them would be consistent with Frege's own philosophical views.

Notice further that the stipulated relation between "the least rapidly convergent series" and the empty set doesn't enter into the right account of the semantic contribution of the empty expression to larger expressions. It evidently doesn't help provide a correct explanation of why "there is no such thing as the least rapidly convergent series" is true. What is really doing the work in fixing the semantics of the expression must be something else, something other than a referent. Thus Frege's approach obscures Brentano's problem.

This point suggests that Evans is quite right when he refers to his treatment of empty expressions as 'the great fault-line in Frege's mature philosophy of language' (Evans 1982, p. 24). For it is difficult to see why Frege retained his insistence that every significant expression in serious discourse must have a referent. If the arbitrarily chosen referent of an empty expression does not reflect the expression's real semantics, then why bother with it? As Evans points out, it is quite possible to provide a logic that would be adequate for Frege's purposes and that does not require reference for all significant terms: a "free" logic. One would simply specify rules for computing the values of complex expressions that correctly state the contribution of empty expressions. Perhaps Frege did not see this possibility, in which case there would have been a striking blind spot in the mind of the inventor of modern logic. Or perhaps he did see it, but rejected it for some unknown reason. Either way, there is evidence that very powerful intellectual currents are pulling Frege in different directions.

0.3 Russell's solution

Bertrand Russell provided the obvious solution to the problem of "the least rapidly convergent series", and other empty definite descriptions. Definite descriptions are complex expressions and their parts may be significant. It is obvious that the semantic features of definite descriptions are owed to those of their parts. So, as long as they all have reference, all should be well, even for a fundamentally reference-based semantics. All that is required is an account of how these referents combine to render significant the description as a whole. Russell's theory of descriptions achieves that.

Russell accounts for definite descriptions, in effect, by treating them as quantifiers. A sentence of the form "the F is G" really means something that could be expressed as: "there is exactly one F and it is G". Thus "the F" can be significant even if it doesn't pick anything out. The theory of descriptions also offers an obvious explanation of why different co-referring descriptions have different cognitive value: "the F = the G" can be informative, when true, because in typical cases, it will not follow from the fact that just one thing is F, that it (and it alone) is also G.

The quantificational treatment of definite descriptions occurring in technical discourse is very satisfactory. Whether it is correct for natural language is a matter of considerable controversy. But even if it is, there are many other types of expression that may be empty. For example, proper names ("Dracula") and general terms ("phlogiston", "ghost"). Russell himself endeavoured to generalise the solution to all these cases. Thus "Dracula" might be treated as equivalent to something like "the greatest Transylvanian vampire", and "phlogiston" as, say, "the substance that, together with calx, composes metals". These redeployments of the theory of descriptions are highly problematic, as we will see in subsequent sections.

1. Names and Name-Concepts

1.1 Kripke's Objection

The description theory of names is not very plausible, for reasons made clear by Saul Kripke (Kripke 1972). If a name has the semantic content of an associated description, then the description must at least describe to the name's bearer. And presumably speakers must associate the description with the name. But among the various descriptions that speakers associate with a name, which are the ones that provide its meaning, hence fix its reference? The theory might be intended as one about the meaning of a name in an individual's idiolect, in which case the descriptions would have to be known to the individual. Or it might be intended as one about the meaning of a name in the language of a community, in which case the

descriptions might not all be known to all speakers. But the same problems accrue to both choices. If we take the totality of associated descriptions, then, for many names that have a referent, the theory will predict that they do not, for there will be no individual satisfying all of the descriptions. And it seems unlikely that there is any non-arbitrary way of singling out a particular subset of the totality that will correctly and uniquely specify the name's referent. Indeed, in some cases, the description most closely associated with the name is false of the name's referent. Kripke points out that a description that many closely associate with "Peano" might well be something like "the man who discovered that certain axioms —the so-called ' Peano's axioms' - characterize the natural numbers". In fact, that description applies not to Peano, but to Dedekind. If that description is included in the relevant set, then either "Peano" refers to Dedekind, or to no-one, if some of the other associated descriptions fail to apply to him.

Kripke offered a different picture of how a name gets its reference. In a broad range of cases, a person is baptised in a dubbing ceremony, and thereby comes to bear the name. Those present at the ceremony then go on to use the name with the intention of referring to the original subject of the baptism. Other speakers acquire the name from members of this group, and use it intending to refer to the same individual as that referred to by the speaker from whom they acquired the name. Thus reference is preserved by a chain of causal-intentional links between bearer and speaker.

Kripke proposed a picture of the meaning of names that is radically different from both Russell's and Frege's, but rather goes back to John Stuart Mill (Mill 1843). On this picture, the meaning of a name is exhausted by its referent: empty names are meaningless, and co-referential names have the same meaning. The Millian view of names is closely associated with a particular view of PARs that emerged in the late part of the 20th century and gained popularity by the turn of the 21st, a view I call "neo-Russellianism".

If the only content that names have is their referent, then, it would seem, *prima facie*, that that is all they can contribute to PARs. If that is right, then it looks as though PARs are not opaque and co-referential terms ought to be intersubstitutable, after all. Moreover, the content of a propositional attitude ascribed by a PAR whose content sentence contains a proper name should itself involve the name's referent. This suggests that attitude contents aren't Fregean thoughts. Rather they could be (so-called) Russellian propositions. A Russellian proposition is a structured abstract object containing real-world objects and properties. So, for example to believe that Paris is beautiful would involve standing in a doxastic relation to a proposition that contains Paris itself, along with the property of beauty, something we might crudely represent by " $\langle\langle_{\text{subject}} \text{Paris}\rangle, \langle_{\text{property}} \text{beauty}\rangle\rangle$ ". Neo-Russellianism is the view that the contents of propositional attitudes are Russellian propositions. It is our next topic.

1.2 The Neo-Russellian Problematic

Since apparently opaque PARs make up the canonical discourse of ordinary common-sense

psychology, neo-Russellianism has consequences for our understanding of psychological explanation. Let us consider some of these.

(2) is an example of a typical psychological explanation:

(2) a) Willow wants to fly to Hesperus

b) Willow believes that the *USS Evening Star* is about to depart for Hesperus

so c) Willow attempts to board the *USS Evening Star*

If neo-Russellianism is correct, then (2) is semantically equivalent to (3):

(3) a) Willow wants to fly to Hesperus

b) Willow believes that the *USS Evening Star* is about to depart for Phosphorus

so c) Willow attempts to board the *USS Evening Star*

On the face of it, (2) is a good explanation and (3) is not. If Willow doesn't believe that Hesperus is Phosphorus, then the psychological states cited in (3)(a) and (b) would not explain (3)(c). Similarly, if we knew that (3)(a) and (3)(b) were true, we would not predict (3)(c), unless we thought that Willow believed that Hesperus is Phosphorus. Let's look at some of the responses available to the neo-Russellian.

According to Nathan Salmon (Salmon 1986) and Mark Richard (Richard 1987) referentially equivalent PARs literally say the same things. PARs ascribe Russellian propositions as the objects of attitudes. The proposition that the *USS Evening Star* is about to depart for Hesperus is identical to the proposition that the *USS Evening Star* is about to depart for Phosphorus. We might represent it as either " $\langle\langle\langle_{\text{subject}} \textit{USS Evening Star}\rangle, \langle_{\text{object}} \textit{Hesperus}\rangle\rangle \langle_{\text{relation}} \textit{is-about-to-depart-for}\rangle\rangle$ " or, equivalently, " $\langle\langle\langle_{\text{subject}} \textit{USS Evening Star}\rangle, \langle_{\text{object}} \textit{Phosphorus}\rangle\rangle \langle_{\text{relation}} \textit{is-about-to-depart-for}\rangle\rangle$ ". So, if (2)(b) is true, then so is (3)(b). However, although belief itself is a binary relation between a person and a proposition, it entails the instantiation of a ternary relation between a believer, a proposition and a 'guise', where a guise is a way of thinking about a proposition.

According to this view, the use of different names in different PARs can pragmatically convey information about guises. (2) would typically convey that the guise featuring in Willow's desire to go to Hesperus is the same as that featuring in her belief that the ship is about to depart for

Hesperus. Thus the picture of Willow's psychology conveyed by (2) is perfectly sensible. (3) might be taken to convey the reverse: that the belief and desire feature different guises corresponding to the different words used in the explanation.

This account of the semantics of PARs is certainly radical and interesting. However, it is consistent with a rather mainstream picture of psychological explanation. For it could allow that when somebody says something like (2), the explanatory work is done not by the utterances' literal meaning but rather by the meaning pragmatically conveyed. If guises were taken to be composed of descriptions, then psychological explanation would work as Russell himself had it.

David Braun (Braun 1998, 2001a, 2001b) offers a version of neo-Russellianism that involves a more radical picture of psychological explanation. He does not appeal to pragmatics to differentiate (2) and (3). Rather, he argues that they are equally good, both citing particular events (of desiring and believing) that cause the action .

Braun's position might perhaps be strengthened if we were to add the claim that the descriptions of the causes offered in both explanations attribute to them properties that are relevant to the probability of their effect occurring. Thus someone who believes $\langle\langle_{\text{subject}} \text{USS Evening Star}\rangle, \langle_{\text{object}} \text{Hesperus}\rangle\rangle \langle_{\text{relation}} \text{is-about-to-depart-for}\rangle\rangle$, and who would like $\langle\langle_{\text{subject}} \text{self}\rangle, \langle_{\text{object}} \text{Hesperus}\rangle\rangle \langle_{\text{relation}} \text{goes-to}\rangle\rangle$ to be true, is more likely to board the *USS Evening Star* than someone who lacks those attitudes. Such a person might think of the planet under the same guise in both cases, and so be able to deduce that they could satisfy their desire by boarding the spacecraft. Moreover, even if different guises are involved in the desire and the belief and these guises don't initially feature in an identity belief, there is still a fair chance that the person will end up boarding the spacecraft. They might, for example, make enquiries about which ships go to Hesperus, and be told about the *USS Evening Star*. Equally, they might come to hold the identity belief under the appropriate guises.

It seems right that a psychological explanation framed in terms of Russellian propositions would be a genuine explanation. It is likely that if (3)(a) and (b) are true, then the probability of (3)(c) is significantly higher than it would be if they were not.

There is room to doubt, however, that that is all that psychological explanations have to offer. Fodor (1987 ch. 1) points out that psychological explanations exploit relations among two kinds of properties of psychological states: causal and intentional. In (2), for example, we are told about the content of Willow's belief and desire. From this, we infer something about these states' causal powers; they are likely to cause Willow to act in a particular way. The way this type of explanation works is by predicting causal patterns from rational patterns among the contents. Boarding the *USS Evening Star* is the rational thing for Willow to do, given what she thinks and what she wants.

Someone with a more Fregean orientation than the neo-Russellians —a quasi-Fregean - might

argue that (3) fails as a psychological explanation because it fails to describe the explanans and explananda in a way that reveals a rational pattern. Of course, if Willow were to board the *USS Evening Star*, she would satisfy her desire. But obviously, if Willow herself doesn't think that Hesperus is Phosphorus, then she is not in a position to see this. For all she knows, if she boards the ship, she will end up somewhere other than where she wants. Hence, absent the identity belief, she would have no motive for boarding the ship.

Neo-Russellians have a natural line of response to this objection, which we will consider next.

Rationality and Mental Syntax

Sense was introduced to play certain explanatory roles: it was to explain cognitive value, referential opacity, reference and, perhaps, the apparent significance of empty expressions. In each case, neo-Russellians must either motivate rejection of the apparent explanandum or find an alternative explanation. They typically avail themselves of a particular resource to make these moves; some analogue of mental words. Salmon has 'guises', Braun, 'ways of thinking' and Fodor, the 'Language of Thought'. Let us think of mental words ('Mentalese'), vaguely, as mental analogues of natural language words, probably physically realised by neural phenomena, that can be individuated independently of their semantic content and that have powers causally to influence one another and to move muscles.

Having a propositional attitude then involves having a mental sentence playing a particular causal role in one's head. If someone believes that vampires have no souls, then their mental sentence "vampires have no souls" will enter into the causal explanation of why she behaves like someone who has that particular belief. To express this idea, I'll say that when someone believes that *p*, they "believe*" a mental sentence which means that *p*.

A neo-Russellian might then distinguish two kinds of rationality: "external" and "internal" rationality. External rationality concerns patterns of thought and courses of action that are likely to succeed in the agent's actual environment. Patterns of external rationality can be accounted for in terms of Russellian propositions. Thus for someone who believes <<< _{subject} *USS Evening Star*>, < _{object} Hesperus>> < _{relation} is-about-to-depart-for>> and who would like <<< _{subject} self>, < _{object} Hesperus>> < _{relation} goes-to>> to be true, it would be externally rational to board the *USS Evening Star*. The explanations (2) and (3) both describe Willow in a way that entails that her action is externally rational, although (3) does so in a less helpful way, a way that would only be apparent to someone who knew that "Hesperus" and "Phosphorus" are co-referential.

Internal rationality, by contrast, is determined by logical relations among mental expressions, these relations being determined purely by the expressions' syntax. Suppose that someone believes* mental sentences like (4)(a) and (b):

(4)(a) Anyone who wants to go to Hesperus should board the *USS*

Evening Star

(b) I want to go to Hesperus

They would be internally rational if they made an inference that caused them to believe* a sentence like (5c):

(c) I should board the *USS Evening Star*

Someone who believed* "I want to go to Phosphorus", instead of (b), and who failed to believe* "Hesperus=Phosphorus" would not be internally rational to infer (c), since the inference is invalid.

The view of psychology that this line leads to is one that involves two completely different levels of explanation. One concerns content, construed in terms of propositions. The second involves mental syntax. Syntax, the level of psychological processing, usurps the place of Fregean sense as the locus of internal rationality.

A quasi-Fregean concern with this proposal would be that it fails to underwrite important pieces of psychology, ones that would be underwritten by the quasi-Fregean. In particular, the neo-Russellian apparatus fails to account for certain generalisations. The appropriate level of generality appears to require an additional level of content, something along the lines of sense.

For example, it would be reasonable for a historian of science to claim that ancient Babylonians argued over whether Hesperus is Phosphorus. But it is impossible to make sense of this claim with just the neo-Russellian apparatus. At the level of Russellian propositions, the claim is equivalent to saying that the astronomers argued over whether Hesperus was Hesperus, or whether Hesperus was The Evening Star. This fails to allow us to make any sense of what the historian would be saying. Russellian propositions are too coarse-grained to discriminate among a number of apparently quite different discussions that the historian might be attributing to the Babylonians.

But, the worry goes, mental syntax is too fine-grained. For it is unlikely that there will be any way of identifying the syntax of mental names in the minds or brains of different subjects. Suppose that a and b are two atomic expressions of one person's Mentalese and that c and d are two in another's. It is unlikely that if we consider only the syntax of these items, that we will find any way of figuring out which corresponds to which.

The quasi-Fregean view is that mental syntax and reference don't suffice as foundations for psychological explanation. We need also to recognize something along lines of sense. In particular, we need a kind of content that cuts fatter than mental syntax, that is relevant to opaque PARs, that cuts finer than reference and that helps account for the rationalising role of

psychological explanation. I shall call such content "quasi-sense". One argument for the quasi-Fregean view arises in relation to Brentano's problem. We will consider this in the next subsection.

Empty singular concepts

The neo-Russellian faces obvious problems with empty names. One might read (5) in a history book:

(5) The Egyptian Queen Hatchepsut believed that Ra requested her to build a great, golden obelisk

One might go on to read that Hatchepsut built an obelisk. But "Ra" has no referent, and there is no suitable proposition to be the object of Hatchepsut's belief.

There are three options open to the neo-Russellian. The first would be to bite the bullet and say that the book is wrong about Hatchepsut —or perhaps that it fails to say anything about her, due its deployment of an empty name. The second would be to allow that one can adopt attitudes towards propositional fragments. A propositional fragment is an incomplete proposition: a structured, abstract object with, as it were, a hole in it: fill the hole with an object, and the result is a proposition. Thus to believe that Ra is falcon-headed would be to believe a propositional fragment that might be crudely represented as " $\langle \langle_{\text{subject}} X \rangle, \langle_{\text{property}} \text{falcon-headed} \rangle \rangle$ ", where "x" marks the hole. The third option would be to claim that "Ra" refers to a mythical object. I will briefly consider these in turn.

The first option is very costly. There exists a good deal of apparently excellent history, anthropology and psychology that ascribes propositional attitudes that apparently contain empty singular concepts. Simply to reject this work out of hand seems rash.

The second option runs into a special version of Frege's puzzle. All empty names now make the same contribution to PARs. The propositional fragment expressed by (6a) is the same as that expressed by any of (6b):

(6)(a) Ra asked me to build a great golden obelisk

(b) Buffy/Donald Duck/James T. Kirk asked me to build a great golden obelisk.

The problem is that these empty names don't seem to be intersubstitutable, even after special pleading. Many of us would accept that there is a sense in which if someone believes that Hesperus is a star, then it follows that they believe that Phosphorus is a star. And that's because it is true on the so-called "de re" reading: if one believes of Hesperus that it is a star, then one believes of Phosphorus that it is a star. But there can be no de re reading where there

is no res. Hence it seems to be straightforwardly false that if someone believes something about Ra, then they believe the same thing about Buffy. Prospects for a psychology that simply regarded these as equivalent look dim. Something about Hachepsut would be missed.

The third option at least holds out the prospect of preserving the truth of reports like (5). However, the option presents a strange picture of the role of reference in psychology. Recall that the reason for supposing that reference might matter in psychology was that it might involve relations between thinkers and objects that would be relevant to the explanation of interactions between them. Spike ends up in Paris partly because he has a concept with Paris as its referent. In this case, it is plausible that the referential relation between concept and city is based in part on a Kripkean causal-intentional chain between Spike and the city. And it is those very causal-intentional relations that we would expect to underwrite the explanatory role of reference. For they allow Spike to gather information about Paris, hence find his way there. Indeed, we might think of causal-intentional relations as providing the basis of a sort of information-bearing chain between concept and city: a set of conditions that allows Spike's dispositions to alter his "Paris" beliefs to be appropriately conditioned by Paris's actual properties.

But it doesn't look as though anything analogous would work for relations to mythical objects. Ra's properties have no causal impact on Hachepsut. It thus looks as though reference to mythical objects is not relevant to the psychological role of the concepts involved. The difference between the psychological roles of e.g. "Buffy" and "Ra" would have to be explained independently of their reference. But if it's possible to distinguish those concepts on psychological grounds that have nothing to do with reference, then one would expect the same to hold for "Hesperus" and "Phosphorus" concepts.

In the final analysis, there may not be a huge gap between quasi-Fregeans and neo-Russellians with respect to singular concepts. The real debate should probably be over whether non-singular concepts - e.g. concepts of red, relation, running, revolution, rarity and rambunctiousness - possess some kind of sense-like content, or whether their mental syntax together with their association with properties, relations or kinds accounts for their psychological role.

The following section offers a quasi-Fregean account that might be sufficiently far from Frege's Ur theory to alleviate neo-Russellian concerns. The account will also serve to introduce some ideas that will feature in what follows.

1.3 A quasi-Fregean theory of name-concepts

Let's suppose that a person's understanding of a proper name partly involves a concept of the name's bearer; a "name-concept". A concept is a mental particular, a component of thoughts. Let us further suppose that name-concepts are relatively permanent items in a thinker's

repertoire. When you first encounter someone, you form a concept of them which you then retain as long as you remember them. It is also tempting to suppose that the concept owes its existence and nature to something like a mental dossier. In this dossier, you collect descriptive information that you believe to be true of the individual. The content of the dossier determines the way in which you think of the individual and the way in which the concept behaves in thought.

We now have a possible quasi-Fregean account of the role of names in psychological explanation. A quasi-sense is a name-concept type. A token concept's quasi-sense is fixed by the information in its associated dossier. Two dossiers with the same descriptive contents will provide the same quasi-sense. Two dossiers with different descriptive contents will not provide exactly the same quasi-sense, but may perhaps provide very similar ones.

Quasi-senses can play some of the roles of Fregean senses. Thus they allow for significant empty concepts: one opens a mental dossier either falsely believing in the existence of an individual, or abstaining, or believing that it is fictional. Equally, one may have different concepts of the same individual.

We might suppose further that PARs are sensitive to quasi-senses. Since the dossiers that different people associate with the same name are likely to be different, we cannot help ourselves to the idea of 'the' quasi-sense of e.g. "Hesperus", and so we cannot say that when the term features in a PAR, it refers to its sense. But it is not implausible that our interpretation of PARs is sensitive to the contents of people's dossiers. Thus it is correct to characterize Hatchepsut's attitudes with the term "Ra" (rather than "Buffy") because there is an appropriate overlap of descriptions between Hatchepsut's dossier and ours.

What is the relation between quasi-sense and reference? Here the quasi-Fregean can side with the neo-Russellian. Quasi-sense neither explains nor determines reference. The reference of the concept is not fixed by the contents of the dossier, for the Kripkean reasons given above. Rather, something else must account for it. For a range of typical cases, perhaps the account would involve an information chain, as mentioned above. The idea would roughly be this: individual x has a name-concept, N , that refers to y , if x 's dispositions to revise beliefs containing N are appropriately sensitive to y 's properties. In typical cases, appropriate sensitivity is explained by an information chain. X and y are at opposite ends of the chain and other speakers provide the links. Y 's actual properties are causally relevant to the descriptions that go into people's dossiers, and to the things people tell each other when they use the name.

The difficulty would be to spell out the idea of appropriate sensitivity. For example, the chain need not endow x with only true beliefs about y . And infinitely many truths about y will always remain out of x 's ken. Perhaps an account could be given in terms the concept's endowing the possessor with some kind of general, although of course limited and fallible, capacity to discover truths about the object.

In other cases, reference does not seem to have to do with information chains. Purely descriptive information can suffice to underwrite possession of a name-concept. For example, Tara might choose to adopt a name for the first male child born in the 22nd century: say "Manchile". Tara might then try to make predictions about this child. She might create a dossier and proceed with her research. Such activity would seem to endow Tara with a concept that has a specific referent, even though the object doesn't yet exist. There is no information chain between the object and the concept, because that would require the object to be able to affect Tara's beliefs, and he can't do so yet. However, the description that fixes reference might play a somewhat similar role in conditioning Tara's "Manchile" beliefs. If she is intelligent and well-informed, she might be able to learn quite a lot about Manchile. She might even be able to predict where and when he will be born, and might choose to go there and actually meet the baby.

One might then hope to develop an account of singular reference that would be of some use for psychological explanation, and one that would be constrained by it. We want to explain why I believe that Hatchepsut built a great, golden obelisk, why Willow ended up on Venus, why Tara will be at a particular place at midnight on 31/12/02. In each case, the subject's possession of a name-concept that refers to a particular object has a role to play in the explanation. Singular reference could fruitfully be thought of as whatever relation it is that plays that sort of role in those sorts of explanations

We shall shortly look at non-singular concepts, with an eye to considering to what extent conclusions reached about name-concepts might apply to them. We will focus on a natural kind concepts, and a view developed by Hilary Putnam. Before that I shall use the account of name-concepts to introduce some new ideas that will feature in the discussion of kind concepts.

1.4 Twin Earths, extension-independence and narrow content

There are reasons to suppose that quasi-senses of names are reference-independent, in that their identity and existence don't essentially depend on their reference. The idea can be illustrated in terms of a philosophical device introduced by Hilary Putnam (Putnam 1975): Twin Earths. Twin Earths are exact or nearly exact duplicates of Earth, atom for atom replicas, except for the occasional interesting difference. Let us imagine two Twin Earths, one being an exact duplicate of Earth, the other being as like Earth as possible, except that there, no Hatchepsut existed, although Twin Egyptologists thought that one did. I have Twins on these planets and they have "Hatchepsut" concepts. For the purposes of this thought experiment, we can assume that we have exactly matching descriptions in our dossiers and so that the quasi-senses of our concepts are the same. Thus they are reference-independent.

The idea of reference-independence is related to, but distinct from, an important notion introduced by Putnam in connection with Twin Earths, the notion of narrowness. A property is narrow if an object's possession of it does not essentially depend on any factors beyond the

object's spatial boundaries. Narrow properties are intrinsic rather than relational. Thus Twins normally share their narrow properties, but may differ in their non-narrow (aka "wide") ones. Correlatively, we have the notions of narrow and wide content: a content of a psychological state is narrow if a subject's being in a state with that content doesn't essentially depend on anything outside her skin. If a content is not narrow, then it is wide.

Narrowness is a stronger notion than reference-independence, since the latter requires independence from reference only and not from everything outside the skin. Quasi-senses are reference-independent, but they may not be narrow. A subject's possession of a concept with a particular quasi-sense may essentially depend on some feature of their environment other than the referent.

We will now move on to discuss a particular variety of non-singular concepts, so-called 'natural kind' concepts, that have appeared to many to resemble singular concepts in important respects. We will consider to what extent that appearance is correct.

2. Natural kind concepts

2.1 Putnam's proposals

Putnam used a Twin Earth scenario to argue that the meaning of natural kind terms is wide. In so doing, he produced a model of these terms according to which they work much like names. Since his reasoning seems to apply more or less directly to the concepts we express by these terms, the model has important ramifications for philosophy of psychology. Here is Putnam's argument.

Putnam asked us to imagine a Twin of Earth in 1750, a time at which the chemical composition of water was not known. This Twin Earth is exactly like Earth in all superficially observable respects. The key difference is that the stuff that there fills the rivers and oceans and that Twin English-speaking people call "water" is not composed of H_2O , but has a complicated composition that we can call "XYZ".

Putnam argued as follows. We intend to use our term "water" to refer to the stuff we have actually been calling "water" and to other samples of the same kind of liquid. Scientists tell us that the relevant kind is H_2O . XYZ is not H_2O and, chemically speaking, it constitutes a different kind of liquid. So our term "water" is not true of Twin water. Moreover, the Earth term "water" meant the same in 1750 as it does now: it is true of x if and only if x is a sample of H_2O . If a 1750 Earthman had come across a sample of XYZ and said "that's water" he would have said something false. But the Twin Earth term "water" extends over their local wet substance: it is true of XYZ and XYZ only.

Now let us consider a typical Earthman, Oscar, and his Twin Earth counterpart, Oscar_T (ignoring the fact that humans are made out of water). By hypothesis, their narrow properties are the same. But the extensions of their terms "water" differ. So "water" seems to be like the proper name "Hatchepsut": its extension is not fixed by narrow properties of speakers.

Putnam sketched a two-factor account of natural kind terms that is somewhat similar to the two-factor account of names sketched above. One factor would include descriptive 'markers' describing features useful for identifying the extension ("transparent, odourless, boils at 100 degrees C" etc.). The other would be the extension condition.

The descriptive content need not determine the extension. The account again is modelled on proper naming. According to Putnam, kind terms work roughly as if there had been a dubbing ceremony, along the following lines: someone pointed to some particular samples and said: "the term 'water' is to apply just to these samples and to anything else that is the same kind of liquid as them". What counts as the same kind of liquid is to be determined by scientific investigation, which, if things go well, will tell us about nature's own joints.

Putnam's reasoning appears to carry over to the concepts we express by natural kind terms, although Putnam did not discuss the matter. Assuming that Oscar believes what he says, the belief he expresses when he says "it is good to add water to whisky" differs in content from the belief that Oscar_T expresses when he produces the same sounds. Oscar believes that it is good to add water to whisky. Oscar_T believes, rather, that it is good to add Twin water to whisky.

According to the Putnamian picture, the extension conditions of natural kind concepts are determined in part by the actual nature of samples that are available in the local environment even when speakers are unaware of that nature. Putnam also argued that a second wide factor enters into determining extension: other people. He used the following illustration.

Putnam knows that elms and beeches are both deciduous trees, and he knows roughly what they look like. However, he cannot tell the difference between them. There is a Twin Earth very like this one, the only difference being that there, experts use the term "elm" to refer to beeches and "beech" to refer to elms. When Putnam uses the word "elm" he means *elm*. By contrast, when Putnam_T says "elm" he intends to speak Twin English, and so he means: *beech*.

Once again, the Putnamian picture portrays a similarity between proper names and natural kind terms. In both cases, speakers intentions to defer to others are held to link the term to its extension. In the case of kind terms, it is a matter of deferring to experts to fix the extension of one's term. In both cases, the ordinary speaker uses the word with a meaning that others have provided for it.

Again, the conclusion appears to apply also to concepts: when Putnam says "Elms are

deciduous" he expresses his belief that elms are deciduous. When Putnam_T makes the same noises, he expresses his belief that beeches are deciduous. So it appears as though the content of an individual's psychological states is partly fixed by the way other people use words.

2.2 Internalism and externalism

Putnam's arguments raise interesting questions about the content of psychological states. The conclusion of the arguments is that at least some of them have wide contents. Philosophers have reacted to the argument in a number of different ways. Under a crude categorisation, these divide into two broad categories: internalism and externalism. An internalist believes that every psychological state has a narrow content. There are two subcategories of internalism. One view accepts the Twin Earth arguments, and allows for two kinds of content: wide and narrow. Thus, for example the Oscars' "water" concepts have different wide contents, but also have a shared narrow content. We might call this view "two-factor internalism". The other view (one-factor internalism) simply rejects the Twin Earth arguments and holds that the Oscars "water" concepts share a narrow content and have no additional wide content. Externalism is the denial of internalism and holds that at least some psychological states have wide contents and no narrow contents.

Motivations for internalism are various. Many internalists have been motivated by the thought that narrow content is required in an account of psychological explanation. One idea, to put it very crudely, is that if content is going to do any real causal work in driving the body around, then it has to be narrow. Another idea, put equally crudely, is that the role that Twins' counterpart psychological states play in their psychologies is sufficiently similar to warrant ascribing them the same contents. And there have been motivations for internalism of quite different sorts as well.

Externalists are skeptical that every concept has a narrow content. The skepticism has been partly motivated by the fact that it proves very hard to provide a decent account of it. What, for example, is the narrow content of the belief that the Oscars express when they say: "It is good to add water to whisky"?

It might seem tempting to propose that narrow content could be explained in terms of associated descriptions, much like the quasi-senses of proper names. Both Twins think of their local liquid as transparent, wet, tasteless etc.. The problem with this is that descriptive associations are just made up of more concepts. Unless these concepts have narrow contents - and so are not subject to externalist Twin Earth arguments - the problem remains. For the proposal to work, it would have to be that for every concept with a wide content, there is some set of descriptive associations whose contents are narrow and that suffices to account for the concept's cognitive role. But there is no obvious reason to suppose that that is the case. Someone impressed by social externalism, for example, would hold that most of our concepts have wide contents, and so would find the proposal implausible.

Other accounts of narrow content have been proposed. The majority of these have been offered by two-factor internalists. Wide content is understood in terms of extension conditions or something that determines extension conditions. And narrow content is something else, something divorced from extension. A common problem with such views is that if the content of psychological states is to appear like content, then it ought to be ascribed by PARs. But any content so ascribed seems to determine extension conditions. Oscar believes that it is good to add water to whisky. Oscar_T doesn't: he believes that it is good to add Twin water to whisky. Here, the difference in extension of the Twins' concepts is reflected in the different PARs.

Shortly, I will outline a one-factor internalist alternative which allows that narrow content determines extension. The view involves rejecting the externalist interpretation of the Twin Earth experiments. It entails, for example that Oscar does not believe that it is good to add water to whisky and Oscar_T doesn't believe that it is good to add Twin water to whisky. What they both believe is that, let's say, it is good to add 'dwater' to whisky, where dwater includes both XYZ and H₂O and anything suitably waterlike: the hydroid motley.

2.3 Problems for externalism

There are serious grounds for questioning externalism. I shall offer just a brief sketch of the main problem with social externalism, then discuss in more detail some problems with the externalist view of natural kind concepts.

A problem for social externalism

The chief problem with social externalism is that it is in tension with any quasi-Fregean view of content. According to social externalism, when Putnam says "elm", he expresses the same quasi-sense as an expert does when she uses the same term. This appears dubitable. Suppose that Putnam becomes friendly with a group of horticulturalists and happens to be present while they discuss the nature of ulmi. As he listens, Putnam learns enough to become expert in the use of "ulmus". Were you to ask him what an ulmus is, he would give an expert response. However, it does not occur to him that "ulmus" is another name for elm, which in fact it is. Hence he doesn't believe that ulmi are elms. This indicates that he associates different quasi-senses with the two terms. Presumably, it is the quasi-sense he expresses by "ulmi" that corresponds to the experts' concept, rather than the one he expresses by "elm". Hence Putnam and the experts mean different things by "elm" after all.

Problems for externalism about kind concepts

A crucial premise in Putnam's Oscar argument is the claim that "water" in a 1750 speaker's mouth was already functioning as a natural kind term, in the sense that it was true of just H₂O. Putnam supported this claim with his model of the working of natural kind terms in lay

vernacular: the dubbing-ceremony idea. The claim about the extension conditions of "water" in 1750 and the model of kind terms are appealing and have won the support of many professional philosophers. However, there are good reasons to dispute them.

Putnam's model yields predictions about how the usage of a term should evolve as a community moves from pre-science to science. Suppose that in a pre-scientific community, a term is typically applied to samples most of which fall within a natural kind. Suppose also that there are a few cases in which people apply the term to things that are only superficially like samples of the kind, or fail to apply it to samples of the kind which are superficially different. What happens when the science is done and the facts are discovered?

Putnam's model predicts that in standard cases, usage will adjust. Speakers will correct the under- or over-applications, in the light of their new knowledge. In fact, however, this often appears not to happen. Moreover, in cases where it does seem to happen, there are reasons to suspect that the meaning of the term has changed with the development of science, and that the new usage does not reflect the original meaning. Let us consider some examples.

"Whale" extends over large cetations, an order that includes porpoises and dolphins. Usage did not adapt to correct what would have seemed - if speakers were attempting to capture a natural kind - to be a case of under-application. The same applies to "emerald" and "aquamarine", both of which extend over beryl: the former green, the latter blue. Another example is "cat", which extends over members of the family Felidae, but also over a few outsiders, such as civet cats.

Of course, there are cases where usage does alter with the development of science. For example, when people realised (by using telescopes) that Mars, Venus etc. weren't self-luminous, they fairly soon ceased to call them "stars". But that does not show that prior to this change, people were wrong to call the planets "stars". Rather, the change in usage might have accompanied a change of meaning. Under this alternative, the term "star" would originally have been true not just of stars, but of a motley of different kinds of heavenly bodies. When the important difference between planets and self-illuminating bodies was noticed, there was an adjustment of terminology that reflected this new knowledge and produced a more accurate classificatory scheme.

As a general model of the relation between lay and scientific usage, the idea has its attractions. For our classifications of natural phenomena serve many and various kinds of human concerns that often are not dominated by a passion for carving nature at its joints. And for most of our history we have had to do without science. There was certainly no science around while our distinctively human concept-forming mechanisms evolved, between (say) four million and one or two hundred thousand years ago. Given that, it's not so easy to see how lay words and concepts would have come to have natural kinds as their extensions. If Putnamian dubbing ceremonies actually occurred, then that might help explain it. But it is not easy to imagine our Cro-Magnon ancestors participating in them.

Our normal concepts for natural phenomena differ in very significant ways from our name-concepts of individuals. First, being able to re-identify particular individuals and being able to keep track of information about them are matters of importance to us in ordinary life. Keeping track of natural kinds, in the sense of being able to identify their instances, is less so. It doesn't matter to us that broccoli and cauliflower are con-specifics: what matters are their horticultural and culinary properties. It doesn't matter to us that fish are genetically extremely diverse: they are similar enough from the human perspective all to be called "fish".

Secondly, we are good at re-identifying and keeping track of particular individuals, particularly with the help of other people and their capacity to use language to pass on information. We are relatively poor at re-identifying the same kind: superficial similarities prevent us from seeing deeper differences, and superficial differences prevent us from seeing deeper similarities. In the normal run of things, our cognitive relations to kinds are not grounded in an information chain, or a useful reference-fixing description, in the way our name-concepts are. Unsurprisingly, non-scientific people living in nature (such as tribespeople in Africa and central and south America) don't have many classificatory schemes that correspond to scientific ones.

One important class of exceptions to the disparity between natural and scientific classifications lies in so-called 'folkbiology': non-scientific understanding of animals and plants. There appears to be a high degree of convergence between science and the folk in the classification of what Scott Atran calls "generic species" (Atran 1999). Classification by generic species, according to Atran, is a culturally universal method of folkbiological taxonomy of local flora and fauna. Generic species often correspond to scientific species or genera such as hummingbird, dog and oak.

However, it is important to understand the nature of correspondence between lay generic-species concepts and scientific concepts. Their extensions are reasonably coincident in the actual world. But they are embedded in very different modes of thinking. The folk classification is not intended to be a first pass at limning the structure of the world, as that would be revealed by science. In particular, with respect to biological categories, the folk do not appear to think that species have hidden real natures of a sort that science could discover. Nor do they appear to think that genetic or kinship properties are definitive of membership of the category (Atran et. al. forthcoming). They would probably regard a Twin robin as belonging to the same generic species as a robin, even after being told that its ancestry was completely unconnected with any robin on Earth.

Thirdly, proper names are typically introduced by actual dubbing ceremonies or explicitly known conventions. And we explicitly understand the relation between the dubbing of an individual and the semantics of the name: for an object to be the extension of the name just is for it to be identical with the dubbed individual. By contrast, we are not normally aware of the origins of kind terms, nor do we have reliable and consistent intuitions about criteria for membership of the extension. We don't normally know, as lay speakers, what kind of kind the extension is

supposed to be: whether it is a natural kind or a motley, if the former, at what level of generality it occurs (e.g. subspecies, species, genus ..), etc..

Recall that an important part of the appeal of attributing wide content to name-concepts, from a psychological point of view, is that its referential relation might be relevant to the role of the concept in psychological explanation. The cognitive role of the concept is often sensitive to facts about the concept's referent, via associated beliefs (the contents of the dossier, on the suggested picture). Moreover the referential relation between concept and object might enter into the explanation of real interactions between the thinker and the object: Spike arrives in Paris partly because he has a concept that refers to Paris.

Assuming that lay kind terms have natural kinds as their extensions offers little hope of such explanatory and predictive benefits. The suggested rival hypothesis that lay speakers deploy motley concepts does better. Consider Oscar. Under the natural-kind hypothesis, his "water" concept is true of just H₂O, while under the motley hypothesis it is true of dwater: H₂O and XYZ and anything suitably similar. "Dwater" is our word for the motley, our translation of Oscar's term "water", under the motley hypothesis. Since XYZ is superficially indistinguishable from water, a wide range of counterfactuals concerning Oscar's behaviour towards XYZ and water are going to be the same. For example, if Oscar were confronted with a glass containing some water or XYZ and was thirsty, then he would probably drink the contents of the glass. In these cases, attributing to him a dwater concept underwrites the counterfactuals more neatly than the alternative. He drinks the XYZ in the glass because it's dwater, and he believes that dwater is thirst-quenching. If we say instead that he believes that water is thirst-quenching, we have more explaining to do. We then have to point out that Oscar believes that the glass contains water, and that he does so because that's what it looks like to him.

It would not be to the point to object that to offer a complete explanation of Oscar's action, the motley hypothesis would also have to spell out auxiliary beliefs and perceptions of Oscar's; the belief that the glass contains dwater, caused by the fact that the sample looks like dwater to Oscar. For the whole point of invoking wide content was to allow us to appeal directly to real relations between subject and world in our explanations of interactions between the two: Spike arrives in Paris partly because he has a concept that refers to Paris. The information chain implicit in the concept allows the subject to acquire enough true beliefs to attain his goal. Wide content explanations are supposed to replace spellings out of the psychological details with quantifications over them. Once we have to spell them out, no advantage is gained. But — ironically - when we do appeal in this direct way to the extension of a concept, we do better to attribute motleys than kinds.

Of course, if Oscar had the clear view that what he calls "water" had a hidden real essence potentially discoverable by science, then that would provide at least some evidence for the kind hypothesis. But typically, outside scientific communities people don't seem to have such views. And even within them, people's intuitions are unstable. In the particular case of "water", many

people fairly explicitly now hold the view that it extends over H₂O only. But consider the following counterfactual. Suppose that friendly aliens had provided a taxi service between Earth and Twin Earth in the 18th century, and travel between the planets had become common. People, unaware of any difference between the two hydroid substances, would have applied the term to both equally. When the differences were discovered, they would probably have said: "Oh, there are two kinds of water".

Under the kind hypothesis, Earthmen would have been making a mistake when they first called XYZ "water". After sufficient interaction between Earth people and XYZ, there would have been an undetected shift in the extension of the concept. But these claims have no independent motivation. As I have emphasised, the reactions of the protagonists involved would not support that interpretation. Rather, they would leave the matter open. Suppose for example that when an Earth scientist first arrived on Twin Earth, he suspected for some reason that the watery substance there might be chemically different from Earth water. He might have said: "Hmm, I suspect this isn't really water". But he might just as well have said "Hmm, I suspect that this water might be interestingly different from water on Earth".

3. Conclusion

Putnam (1975) wrote: "Traditional philosophy of language...leaves out other people and the world; a better philosophy and a better science of language must encompass both". It is worth considering the possibility that the role of other people and the world in determining the meanings of an individual's words and the concepts and thoughts that are available to her is very limited. With the exception of fixing the reference of singular concepts, maybe other people and the world can only make a difference to the contents of an individual's mind by the normal methods, that is, by having some causal impact on her.

BIBLIOGRAPHY

Atran, S., 1999, "Itzaj Maya Folkbiological Taxonomy: Cognitive Universals and Cultural Particulars", in Medin and Atran eds..

Bach, K., 1994, *Thought and Reference*, Oxford 1994.

Blackburn, S., 1984, *Spreading the Word*, Oxford, Oxford University Press.

Block, N., 1986, "Advertisement for a semantics for psychology," *Midwest Studies in Philosophy*, no. 10, eds P. French et al 615 678, Minneapolis, University of Minnesota Press.

- Braun, D., 1998, "Understanding Belief Reports" *The Philosophical Review* 107, pp. 555-595.
- Braun, D., 2001a "Russellianism and Prediction" *Philosophical Studies* 105, pp. 59-105.
- Braun, D., 2001b, "Russellianism and Explanation" *Philosophical Perspectives* 15, pp. 251-289.
- Braun, D., 1993, "Empty Names" *Nous* 27, pp. 449-469.
- Brentano, F., 1874, *Psychology from an Empirical Standpoint*, Vienna.
- Burge, T., 1977, 'Belief De Re', *The Journal of Philosophy*, 74: 338-362
- Burge, T., 1979, "Individualism and the Mental" in P. French, T. Uehling and H Wettstein eds, *Midwest Studies in Philosophy no. 4*, 73-121, Minneapolis, University of Minnesota Press
- Burge, T., 1989, "Wherein is Language Social" in George, A. ed. *Reflections on Chomsky*, Blackwell Oxford
- Chisholm, R., 1967 "Intentionality", in *The Macmillan Encyclopaedia of Philosophy*, ed. P. Edwards, Macmillan, New York 201-4.
- Dupre, J., 1999, "Are whales fish" in Medin and Attran eds.
- Evans, G. 1973 "The Causal Theory of Names", *Aristotelian Society Sup. Vol. 47* 187-208.
- Evans, G., 1982, *The Varieties of Reference*. Oxford: Oxford University Press.
- Evans, G., 1981 "Understanding Demonstratives" in H. Parret and J. Bouvaresse (eds) *Meaning and Understanding*, De Gruyter: Berlin and New York 280-303.
- Field, H., 1977, "Logic, Meaning and Conceptual Role", *The Journal of Philosophy* 69.
- Frege, G., 1847 "Logic" MS.
- Frege, G., 1892, "Uber Sinn und Bedeutung" *Zeitschrift fur Philosophie und philosophische Kritik*, vol 100, 25-50.
- Geach, P., and Black, M., eds., 1952, *Translations from the Philosophical Writings of Gottlob Frege*, Rowman and Littlefield, New Jersey.
- Fodor J. A., 1991a, *A Theory of Content And Other Essays*, MIT Press, Cambridge MA.
- Fodor J. A., 1991b, "A Modal Argument for Narrow Content", *The Journal of Philosophy* 88, 5-26.
- Fodor, J. A., 1994, *The Elm and the Expert*. Cambridge Mass: The MIT Press.
- Gelman, S. and Hirschfield. L., 1999 "How Biological is Essentialism?" in Medin and Atran eds.

- Husserl, E., 1950. *Husserliana*, The Hague.
- Kaplan, D., 1989, "Demonstratives," in *Themes from Kaplan*, eds, Almog, J. et. al., Cambridge University Press.
- Kaplan, D., 1990, 'Thoughts on Demonstratives', reprinted in Yourgrau (ed.).
- Kaplan, D., 1990, "Words", *Proceedings of the Aristotelian Society*, supp. Vol. 64, 93-119.
- Katz, J., 2001, "The End Of Millianism", *The Journal Of Philosophy* 98, 137-166.
- Kripke, S., 1972 "Naming and Necessity" in D. Davidson and G. Harman. Eds., *Semantics of Natural Language*, Reidel Dordrecht.
- LaPorte, J., 1996, "Chemical Kind Term Reference and the Discovery of Essence", *Nous*, 30, 1, 112-132.
- Larson, R. and G. Segal, 1995, *Knowledge of Meaning: An Introduction to Semantic Theory*, Cambridge, MA: The MIT Press.
- Lewis, D., 1997, "Naming the Colours", *Australasian Journal of Philosophy* 75, 325-342.
- Loar, B., 1987, "Social Content and Psychological Content" in R. Grimm and D. Merrill eds., *Contents of Thought: Proceedings of the 1985 Oberlin Colloquium in Philosophy* 99-139, includes comments by Akeel Bilgrami.
- Makin, G., 2000, *The Metaphysicians of Meaning: Russell and Frege on Sense and Denotation*, Routledge, London.
- McDowell, J., 1977, 'The Sense and Reference of a Proper Name', *Mind* 86: 159-185.
- McDowell, J., 1984, 'De Re Senses', in C. Wright ed. 98-109.
- Medin, D. L., and Atran, S., eds. 1999 *Folkbiology*, Cambridge MA, MIT Press.
- Meinong, A., 1904, "Uber Gegenstandstheori" translated by R. Chisholm as "The Theory of Objects" in Chisholm ed. *Realism and the Background of Phenomenology* Glencoe, Ill., 1960.
- Mill, J. S. 1843 *A System of Logic*, New York: Harper Brothers.
- Millikan, R., 2000, *On Clear and Confused Ideas*, Cambridge University Press, Cambridge.
- Peacocke, C. A. B., 1981, "Demonstrative thought and Psychological Explanation" *Synthese* 49: 187-217.

- Peacocke, C. A. B., 1983, *Sense and Content*, Oxford University Press: Oxford
- Peacocke, C. A. B., 1993, "Externalist Explanations" *Proceedings of the Aristotelian Society* 93:203-230.
- Perry, J., 1990, 'Frege on Demonstratives', reprinted in Yourgau (ed.).
- Putnam, H., 1975, "The Meaning of ' Meaning'", in Gunderson. K, ed. *Language Mind and Knowledge, Minnesota Studies in the Philosophy of Science*, University of Michigan Press, Minneapolis.
- Quine. W. v. O 1956 "Quantifiers and Propositional Attitudes", *The Journal of Philosophy*, 53.
- Richard, M., 1987, "Attitude Ascriptions, Semantic Theory, and Pragmatic Evidence", *Proceeding of the Aristotelian Society* 87.
- Rosenberg, J., 1994, *Beyond Formalism*, Temple University Press.
- Russell, B., 1905, 'On Denoting', *Mind* 14: 479-493.
- Sainsbury, R. M., 1993, "Russell on Names and Communication" in Andrew Irvine and Gary Wedeking, eds, *Russell and Analytic Philosophy*, Toronto: University of Toronto Press.
- Sainsbury, R. M., 2002 "Departing from Frege". In his *Departing from Frege: Essays in Philosophy of Language*, London: Routledge 1–28.
- Salmon, N., 1986, *Frege's Puzzle*. Cambridge, MA: The MIT Press
- Salmon, N., 1998, "Non-existence", *Nous*, 32-3, 277-319.
- Soames, S., 1987 "Direct Reference, Propositional Attitudes and Semantic Content" *Philosophical Topics* 15: 47-87.
- Segal, G., 1989a "The Return of the Individual", *Mind* 98 35-57
- Segal, G., 1989b "Seeing What isn't there" *The Philosophical Review* 189-21.
- Segal, G., 2000, *A Slim Book about Narrow Content*, Cambridge, MA, MIT Press.

Segal, G., in preparation, "Keep Making Sense", for T. Crane ed., *Contemporary Philosophers in Focus: Jerry Fodor*, Cambridge University Press

Tye, M., 1989, *The Metaphysics of Mind*, Cambridge University Press.

Williamson, T., 2000, *Knowledge and its Limits*, Oxford University Press, Oxford.

Wilson, M., 1982 "Predicate Meets Property" *Philosophical Review* 91, 549-89.

Wright, C., ed ., 1984 *Frege: Tradition and Influence*, Oxford: Blackwell.

Yourgrau, P., 1990, ed. *Demonstratives*. Oxford: Oxford University Press.