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Why Rationalist Compositionality Won't Go Away (Either)*

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ABSTRACT: Vigorous Fodorian criticism may make it seem impossible for Inferential Role Semantics (IRS) to accommodate compositionality. In this paper, first, I introduce a neo-Fregean version of IRS that appeals centrally to the notion of rationality. Second, I show how such a theory can respect compositionality by means of semantic rules. Third, I argue that, even if we consider top-down compositional derivability: a) the Fodorian is not justified in claiming that it involves so-called reverse compositionality; and b) a defender of IRS can still offer a satisfactory account in terms of the inferential capacities of rational thinkers.

Keywords: inferential Role Semantics, compositionality, rationality, semantic rule, reverse compositionality.

Over the years, vigorous Fodorian criticism of semantic theories that is based upon the requirements of compositionality (see, for instance: Fodor and Lepore (1991,1992, 2001) and Fodor (1998a, 2004a, 2008)) seems to have achieved its goal. After a certain boom in the 1980s, the virtual silence in the literature strongly suggests that theories that are instances of Inferential Role Semantics (IRS henceforth) have largely fallen into discredit amongst philosophers as satisfactory theories about conceptual content. However, now and then a particular form of IRS has stubbornly resisted the Fodorian compositionality attack; namely, neo-Fregean IRS based upon the notion of rationality. At the end of the day, I believe that those who have obstinately defended such a version of IRS are right to have done so, even though the reasons for such a belief may not have been spelled out sufficiently clearly in the literature. Given this context, I adopt the following strategy in the present paper. First, I will describe the fundamental features of the neo-Fregean IRS under consideration, which effectively amounts to a particular proposal about the nature of concepts in terms of the notion of rationality. Second, through an analysis of the dialectics, I will try to show why rationalist IRS can indeed meet, *pace* Fodor and allies, the requirements of compositionality once certain unnoticed but crucial features of such a theory of conceptual content are highlighted. Third, I will argue that, in spite of the Fodorian shift of attention towards a top-down direction of composition —which results more precisely in the requirements of the so-called *reverse compositionality*— neo-Fregean IRS can still be considered as offering a satisfactory account of the reasonable demands of compositionality. If I succeed, it will be apparent that there is more to rationalist IRS than the Fodorian has ever managed to appreciate.

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1. Rationality and conceptual content

Consider the kind of semantics that is distinctive of neo-Fregean theories of concepts, namely, IRS theories based upon the notion of rationality. There are several significant things that can be said about this particular kind of semantics and about the particular framework within which it arises (a framework I have elsewhere called the Rationality Framework). For my present purposes however, the following capsule characterization will suffice. IRS theories based upon the notion of rationality hold that:

> 1) Concepts are to be conceived at the level of Fregean sense, that is, according to considerations of cognitive significance or potential informativeness for *rational* subjects.[1]
>
> 2) The content of a concept is explained by the set of principles, transitions and-judgements identified in accordance with 1), which hence count as *rational* principles, transitions and judgements.

Granted 1) and 2), two things should be emphasized. *First*, the rational principles, transitions and judgements that explain content are naturally understood as those that a subject must appreciate as correct, valid or true, respectively, if she has (full mastery of) the concept. In other words, the inferential role that determines a concept's content is naturally conceived as an inferential role specifiable in terms of possession conditions for the concept. It is plain that Peacocke's theory as presented in his *A Study of Concepts* (1992) is a clear-cut case of a rationalist IRS as understood here. Thus, a paradigmatic example of a concept's content being explained along the lines of 1) and 2) is Peacocke's celebrated specification of the possession conditions for the concept *conjunction*. The content of *conjunction* (*C*) is accounted for by the fact that a thinker that possesses the concept must find instances of transitions of the following form primitively compelling (and must do so in virtue of their form): A, B/ACB; ACB/A; ACB/B.[2] As a result, the set of transitions that determines the content of *conjunction* is contained in the possession conditions for *conjunction*.

Second, because the principles, transitions and judgements that explain conceptual content are rational, conceptual content is naturally understood as having an intrinsic link to truth. This natural understanding comes from the plausibility of the idea that the inferential role of a concept cannot be one that, in the subject's psychological economy, systematically leads to incorrect applications of the concept or to the systematic formation of false beliefs *in rational subjects*. Thus, according to this particular ap-

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[1] Versions of this distinctive neo-Fregean claim can be found, for instance, in Evans (1982, pp. 18-9), Peacocke (1992, p. 2) and McDowell (1994, p. 180). Notice that although the claim is distinctively neo-Fregean, it is not, strictly speaking, a Fregean one, since Frege considered concepts to be functions from objects to truth values.

[2] These transitions correspond to the introduction and elimination rules for the logical constant. Note that although the account presupposes that conceptual content can be determined in this way for a large number of concepts, it is of course not part of the account that the conditions for conceptual content are as easily identifiable as in the case of conjunction. In effect, these conditions may be very hard to find even for concepts of logical constants —as the case of negation clearly illustrates (*vid.* Peacocke 2004, pp. 94-5).

proach, the correct specification of the content of a concept is constrained by the requirement that such specification must involve the determination of a particular reference for the target concept.[3] Peacocke also provides a model for the defence of this second aspect of rationalist IRS, which since *A Study of Concepts* he has considered in terms of a determination theory for concepts: a theory that specifies for each concept what it is for something to be the semantic value of that concept. Therefore, a paradigmatic example of the articulation of this link between the content of a concept and its semantic value is also the one associated with *conjunction*. According to Peacocke, the determination theory for *conjunction* would take into account the condition for the validity of the transitions mentioned in the possession conditions of the concept, and would identify the corresponding semantic value as the truth function for the logical constant. It is crucial to emphasize in this context that the import of this referential constraint on conceptual content is so great that it can be stated in terms of the principle that Peacocke labels "The Identification" in *A Study of Concepts*:

> Possessing a concept is knowing what it is for something to be its semantic value. (Peacocke 1992, p. 23)

This principle defines precisely the nature of the intrinsic connection between an inferential role and the associated semantic value. In particular, a correctly formulated possession condition must involve the fixation of the condition for something to be the semantic value of the concept in such a way that, according to this account, to have the concept is just to have knowledge of the condition on the semantic value.[4]

2. Rationality and compositionality

As I mentioned above, the kind of semantics I have just described has been called into question precisely on the grounds that it fails to satisfy the requirement of composi-

[3] As an anonymous referee points out, here I am departing from other positions which, in spite of qualifying as neo-Fregean according to the characterization presented, take the notion of truth or of reference to have no such constraining role or even to have no role at all in the proper account of concepts (e.g., Brandom, 1994 or Katz, 2004). It appears to me unclear whether the kind of IRS derived from these other, alternative neo-Fregean positions would be capable of dealing with compositionality. What is clear is that they cannot deal with compositionality in the way recommended here (see below). However, it would be a mistake to claim that the constraining role of reference in the theory of concepts comes, as Peacocke once put it, "merely from reverence for the classical doctrine that sense, together with the world, determines reference" (Peacocke 1992, p. 17). Although there is an obvious relation with the "classical doctrine", in my view the link between conceptual content and conceptual reference is better seen as a consequence of the central role of rationality.

[4] Please note that the *condition* for something to be the semantic value of a concept is not to be identified with the corresponding *semantic value* of the concept. The reason, quite familiar in a neo-Fregean context, is that the condition for something to be the semantic value of a concept can differ for two concepts, *even* if both concepts have *the same* semantic value (*water*/H_2O and *Hesperus*/*Phosphorus* are two common examples). Correspondingly, knowledge of what it is for something to be the semantic value of the concept is not to be identified with knowledge of the semantic value of the concept either (more on this below). Finally, it is worth noting that the notion of knowledge at hand (here and in the case of semantic rules below) need not be personal or self-reflective knowledge: attributions of knowledge of the required sort can be based, depending on the theorist's taste, on dispositions of the subject or, in my view preferably, by appeal to informational states of the subject.

tionality.[5] According to authors of Fodorian persuasion as regards this issue, compositionality requires that the semantic and syntactic properties of complex concepts be, as it were, bidirectionally determined in such a way as to ensure: 1) that the content (plus syntax) of the constituent concepts contributes to the content (plus syntax) of the complex concept; and, more importantly, 2) that the content (plus syntax) of the complex concept be *exhaustively* constituted by the contribution of the contents (plus syntax) of its constituents. One way in which Fodor expresses this idea is the following:

> Compositionality says that, whatever content is, constituents must yield theirs to their hosts and hosts must derive theirs from their constituents. Roughly, the first half is required because whatever is true of cows as such or of brown things as such is *ipso facto* true of brown cows. And the second half is required because, if the content of BROWN COW is *not* fully determined by the content of BROWN and the content of COW (together with syntactic structure), then grasping BROWN and COW isn't sufficient for grasping BROWN COW, and the standard explanation of productivity is undone. (Fodor 1998a, p. 106, his emphasis)

However, if this characterization of compositionality is sound, IRS is under threat according to the Fodorian analysis; IRS cannot account for compositionality as long as it cannot account for the fact that complex concepts are *fully* constituted by their constituents. In turn, IRS cannot account for this because, though the constituents of a complex concept presumably contribute their inferential roles to that complex concept, the inferential role of a complex concept is not always (if ever) *fully* derivable from the inferential roles of its constituent concepts. This is how Fodor puts it:

> If nothing can belong to the content of BROWN COW except what it inherits either from BROWN or from COW, then the content of BROWN COW *can't* be its *whole* inferential role. For, of course, all sorts of inferences can hold of brown cows (not qua brown or qua cows but) simply as such. That's because all sorts of things can be true of brown cows that aren't true either of brown things in general or of cows in general; that they are brown cows is an egregious example. (Fodor 1998a, p. 107, his emphasis)

Clearly enough, the concept *brown cow* intervenes paradigmatically in inferences about brown cows. Fodor's criticism consists of claiming that the inferences in which *brown*

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[5] For instance, in Fodor and Lepore (1991, 2001) and Fodor (1998a, 2004a, 2008). The arguments generally apply to any kind of IRS and, *a fortiori*, to the rationalist kind of IRS just introduced. As is known, what is behind the Fodorian attack on IRS theories is the defence of a general framework according to which concepts are mental particulars within a general "Representational Theory of Mind" with a "Language of Thought" at its heart. This general Fodorian framework is in dramatic opposition to neo-Fregean theories of concepts as here presented. While the latter aim to account for concepts in terms of rationality, the former aims at an account of concepts that makes available a reduction of rationality to computational processes. For my present purposes, I will concentrate exclusively on the debate about the notion of compositionality and I will leave aside general questions regarding the aforementioned rival programmes in the theory of concepts. Likewise, for expository purposes, I will abstract the questions about the notion of compositionality that concern me here from the issues of two other, closely related, but independent Fodorian criticisms of IRS: issues about the analytic/synthetic distinction — to which IRS is said (wrongly in my view) to be committed; and issues about the putative circularity of neo-Fregean accounts of possession conditions (see Fodor 2004a for a synthetic exposition of these criticisms). It is my view that these other two criticisms also demand a reply on behalf of the defender of IRS (perhaps in two separate and equally long papers) which unfortunately I am not able to offer here.

cow intervenes (paradigmatically, the inferences about brown cows) are not always inferences inherited from the inferences in which the concept *brown* intervenes, or inferences inherited from the inferences in which the concept *cow* intervenes, but precisely inferences that solely belong to the concept *brown cow* as such. IRS cannot therefore account for the compositionality of concepts, which means, *a fortiori*, that no theory of concepts that holds to an IRS sort of semantics —such as paradigmatically neo-Fregean theories of concepts— can be correct.

There is a natural reply on behalf of the defender of IRS to the Fodorian criticism as it stands. That reply consists of objecting to the condition that the semantic and syntactic features of primitive constituents must themselves *directly* fully determine the semantic and syntactic features of the complexes they form. In contrast, so the objection goes, all that is needed is that there is a principled way of determining, from the semantic and syntactic features of the primitive constituents, the semantic and syntactic features of their hosts. An objection along these lines is indeed the one that Peacocke has addressed to Fodor's compositionality attack. According to Peacocke, the content of a complex concept is determined by the contents of their constituents *together* with a *semantic rule* that specifies the mode of composition of the complex concept. Such a semantic rule is an account that fixes the condition for something to be the semantic value of the complex concept (or to fall under its extension) out of the semantic values of the constituent concepts. Within the framework of a determination theory for the concept, this rule takes as inputs the semantic values associated with the inferential role of the constituent concepts and, accordingly, does not take as outputs the, as it were, assembled inferential roles. Instead its output is the semantic value associated with the complex concept. Accordingly, Peacocke writes that:

> Once one has fixed a semantic rule —something at the level of reference— for a mode of combining constituent concepts, a rule which takes as input the semantic values of the constituents, nothing more is required to determine the significance of that mode of composition. […] Nor indeed is anything less than the semantic rule going to be sufficient to determine the significance of the mode of combination. So we could call this principle about what determines a mode of combination the 'Nothing-More-and-Nothing-Less Principle'. (2000, p. 339)

However, on reflection, Peacocke's way of appealing to semantic rules in this context is not in the end satisfactory as a defence of a neo-Fregean kind of IRS. There are two reasons for this. *In the first place,* Peacocke seems to be acknowledging that compositionality can only be appropriately understood as a relation at the level of reference or semantic value. This suggestion is reinforced by the following general definition of compositionality:

> [F]or something to be the complex concept *A^B* is for there to be some operation R on semantic values such that the fundamental condition for an entity to be the semantic value of *A^B* is for it to stand in relation R to the semantic values of the concepts A and B respectively. (Peacocke 2004, p. 91)

Peacocke adds that: "This condition is still formulated *wholly* at the level of reference and semantic value" (*op. cit.* p. 91, emphasis added). What is shocking about Peacocke's way of replying to Fodor is that it seems hard to reconcile with the characteristically neo-Fregean view that conceptual content is precisely a notion that cannot be explained entirely in referential terms. If an IRS can accommodate compositionality

only at the level of reference, as Peacocke seems to be saying, then it becomes very hard to object to the idea that the notion of content that is distinctive of the neo-Fregean view cannot respect compositionality. We can see this clearly if we realize that an almost inevitable consequence of Peacocke's definition is that, once a particular relation of composition, R, is fixed, two complex concepts constituted by concepts with the same semantic values have *ipso facto* the same conceptual content. For instance, if we assume —quite palatably— that conceptual structures containing *conjunction* are composed according to the same semantic rule, what Peacocke is apparently claiming in these passages is that pairs of complex concepts such as *water-and-H2O/H2O-and-H2O* or *Hesperus-and-Phosphorus/Phosphorus-and-Phosphorus* have *ipso facto* the same conceptual content. The reason is that a semantic rule (or relation of composition, R) purportedly takes as inputs simply the semantic values of the constituents and not something related to the Fregean sense or cognitive value associated with those semantic values. However, the upshot then seems to be that, in order to respect compositionality, the neo-Fregean has to pay the price of giving up his distinctive notion of content.[6]

Secondly, Peacocke's reply in terms of semantic rules is not satisfactory either as the presentation of a theoretical possibility naturally available from the point of view of a neo-Fregean IRS. More precisely, it seems as though he introduces semantic rules into the picture in a rather stipulative way, to handle a real problem that the theory has with compositionality. As a consequence, Peacocke seems to fail to explain satisfactorily the relevance of semantic rules with regards to compositionality, and why a neo-Fregean IRS based upon the notion of rationality can incorporate semantic rules naturally as part of the theoretical equipment that the theory has in the first place —and not as a gratuitous add-on.

The defender of a neo-Fregean IRS should be, I submit, pretty unmoved by this kind of consideration. In contrast to Peacocke's puzzling suggestion, the neo-Fregean: 1) does not need to claim that compositionality is a relation *only* at the level of semantic value; and 2) does not need to renounce the idea that compositionality can be naturally accounted for from within IRS itself. As regards 1), if there is anything certain about the neo-Fregean story regarding compositionality, it is that it is *not* a relation to be conceived *only* at the level of semantic value. In fact, according to the neo-Fregean view, compositionality can be unproblematically understood as a relation between inferential roles. Of course, the relation is not between just any inferential roles. The

[6] As an anonymous referee points out, the assumption that compositionality is a relation between semantic values would still allow Peacocke the possibility of introducing, for each different compound —say *A^B* and *A'^B* — a different rule for combining them — say R and R'— even when the constituents have the same semantic value. However, it seems to me that the only way of doing so that is consistent with the claim that R is defined for semantic values would be outright stipulation. If one insists on maintaining that compositionality is a relation, R, defined only for semantic values, and we fix R, then one is going to have considerable trouble in justifying (though of course not in just stipulating) the introduction of different modes of composition for constituent concepts with the same semantic value. Nonetheless, I should emphasize that I am far from believing that Peacocke would subscribe to a purely referential notion of compositionality or to the sense blindness of complex concepts (see footnote 7).

role of the notion of rationality in this picture makes it natural, as I advanced above, that the range of inferential roles that define content (and hence, those apt to figure in the rationalist story about conceptual composition) is constrained by the requirement that the inferential roles must fix the *conditions* for something to be the semantic value of a concept. Accordingly, in the response to Fodor's compositionality attack, the rationalist IRS theorist can maintain squarely that, even though inferential roles as such do not compose, conceptual content is still better explained in terms of suitably specified inferential roles. The key move, quite overlooked by the Fodorian and not sufficiently stressed in Peacocke's reply, is that if the inferential role —at the level of sense— is properly connected to a semantic value —at the level of reference— in the terms just highlighted, we can specify the mode of composition of a complex concept as a function of the conditions for something to be the semantic value of the concepts (rather than as a function of the semantic values of the constituent concepts).[7] Therefore, the point of a semantic rule (or relation of composition, R) being part of the reply to the Fodorian criticism is not that semantic rules can take semantic values as inputs (as indeed they can if they are understood in terms of functional application) but, clearly enough, that they can take as inputs the conditions for something to be the semantic value.

As regards 2), the neo-Fregean should furthermore stress that a semantic rule in this context is just the kind of thing that the IRS theorist is ready to offer. In a nutshell, the reason for this is that a semantic rule can be seen precisely as an inferential pattern from constituent concepts to complex concepts. More precisely, a semantic rule is just an instance of the IRS project as applied to the composition of concepts. Moreover, the semantic rule is not correctly viewed as something that the IRS theorist must, as it were, pull out of a hat in order to accommodate compositionality. Far from it, conceptual structure can be accounted for within the neo-Fregean IRS scenario since semantic rules can be taken as part and parcel of the account of the inferential roles of atomic constituents. As a consequence of all this, a specification of a semantic rule is not added as if from outside the theory itself and, in effect, is not even added from outside the resources offered by the account of the content of atomic constituents.

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[7] In Peacocke's reply to Fodor (*vid.* Peacocke 2000, 2004) he explicitly claims that "the composition of concepts is to be explained at the level of reference, or, better, at the level of semantic value" (2004, p. 90). However, this makes it very puzzling that in a response to Davis he is scrupulously clear that, in explaining conceptual structure, he is appealing not to the relations between semantic values as such, but to the "relations between the *condition* for something to be the semantic value of the complex concept and the conditions for things to be the semantic values of its atomic constituents" (2005, p. 173, his emphasis). I do not mean to suggest that the two remarks are inconsistent with each other. It seems to me that they are consistent insofar as an analysis in terms of the condition for something to be the semantic value of the concept can reasonably be taken as part of a determination theory of the concept and, therefore, as being formulated "at the level of reference". However, I submit that it is wonderfully odd that Peacocke did not find it adequate in the case of his reply to Fodor to warn about the clear risk of interpreting his claims as endorsing a purely referential notion of compositionality, above all, because a purely referential notion of compositionality is, if anything, what the neo-Fregean has to reject.

All this certainly needs clarification, so let us consider an example: the complex concept *brown–and–cow*. According to the rationalist approach, in order to explain the composition of this concept, there is no fact of the matter, as Fodor would have us believe, about whether the inferences in which *brown–and–cow* intervenes are the inferences in which *brown*, *and*, and *cow* intervene. Within a rationalist framework, the inferential role of *brown–and–cow* is not the trivial result of directly assembling the inferential roles of *brown*, *and*, and *cow*. To see how this works, let us suppose that the possession conditions (or the corresponding inferential roles), the associated semantic conditions for something to be a semantic value, the semantic values, and the semantic rule relevant to this case can all be stated in accordance with the following diagram:

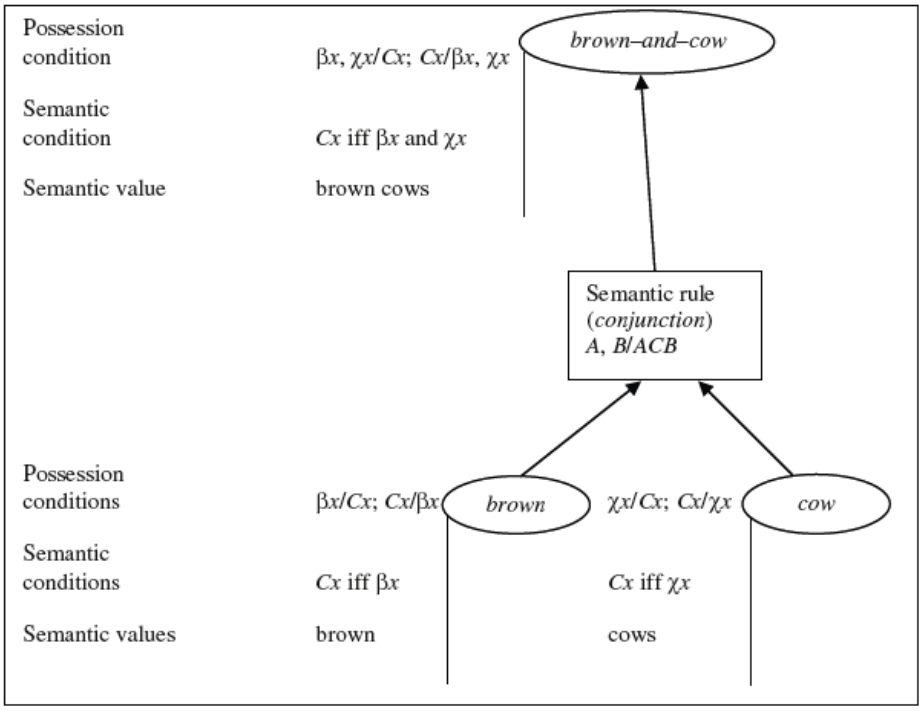

Figure 1. Composition according to a semantic rule. Straight lines are meant to bring together the tripartite characterization (in terms of possession conditions, semantic conditions and semantic values) of concepts, which are in turn represented by the ovals. The arrows show the direction of the composition from the constituents to the complex concept, by means of a semantic rule (represented by the square).

For my present purposes, we can accept (wrongly in my view, but for the sake of the example) that *brown* and *cow* are recognitional concepts of essentially the same sort. Furthermore, their possession conditions can be understood as the set of inferences that lead from the appearance of brown or of a cow, as applied to an object *x*, to the application of the concept to that object; and, *vice versa*, from the application of the

concept to an object *x*, to acknowledgement that the object has such-and-such an appearance. The possession conditions, assuming that they are rightly formulated, should fix the conditions for something to be the semantic values of *brown* and *cow* respectively. Again for present purposes, we can state these as the condition that each concept applies to an object *x* if and only if *x* has the required sort of appearance as specified in the possession conditions. By anyone's account and thereby according to the neo-Fregean, the semantic values of *brown* and *cow* must be, respectively, brown things and things that are cows. With this characterization of the constituent concepts in place, we can proceed to formulate a given semantic rule of composition. What is that rule? Since the complex concept is a pair of recognitional concepts in combination with *conjunction*, we can state the semantic rule by looking at the clauses in the possession condition for *conjunction* and then selecting the clause corresponding to the introduction of the concept. *Qua* semantic rule, this clause is, in turn, naturally conceived in terms of a function that takes us from the conditions for something to be the semantic value of each constituent concept, to the condition consisting of the conjunction of those conditions. This gives us a definite condition for something to be the semantic value of the complex concept by means of the inferential pattern for the introduction of *conjunction* that figures in the possession condition for the concept. As in the case of the constituents, the semantic condition for something to be the semantic value of the concept has a counterpart in a possession condition for the complex concept (that is, a schema of inferences that goes from the conjunctive appearance of brown and of a cow, to the application of the complex concept; and, *vice versa*, from the application of the concept to the assessment that the object has the corresponding appearances) and a determinate semantic value which, as is only to be expected, is just the conjunction of the semantic values of the recognitional concepts at hand.[8]

This analysis of the complex concept *brown–and–cow* is far too simplistic and fairly controversial, but it gives us a very clear idea of what is actually going on in the neo-Fregean proposal.[9] We can see that a rationalist kind of IRS does not view the inferen-

[8] Of course, in the case of a strictly Fregean framework, a semantic rule should be considered in terms of functional application. The semantic rule, in the case of *conjunction* structures, would be a function from truth values to truth values of the form $\lambda p\ [\lambda q\ [\lambda x\ [p(x) = q(x) = \text{true}]]]$ where *p* and *q* would denote *brown* and *cow* understood as functions from objects to truth values of the form λx [*x* is brown] and λx [*x* is a cow] respectively. However, commitment to functional application in this way is not necessary for the *neo*-Fregean story to go through, but only a definite way of determining modes of composition by appropriate semantic rules, as the example in the main text illustrates. The idea that compositionality should be understood primarily as functional application is perhaps the source of the misleading Peacockean suggestion that compositionality is only a relation between semantic values.

[9] It must be noted that the present considerations are neutral with regard to the kind of intensional semantics to be chosen and, in particular, they leave open the possibility of accounts of intensionality in terms of possible world semantics. In that case, the (epistemic) intension of a concept would correspond to the specification of an extension or semantic value in a given world or epistemic state (for an account along these lines see Chalmers (2002)). However, what matters for our present purposes is that intensions (or senses), in whatever precise way they are understood, determine a condition on

tial role of a complex concept as just the assembly of the inferential roles of the constituents, but rather as the assembly of the inferential roles of the constituents, *a*) as constrained by their fixing a condition on a given semantic value, and *b*) according to a semantic rule of composition. It is important to emphasize that within this rationalist framework it is therefore not the case that compositionality operates *only* at the level of reference. Consider the complex concept *earth-coloured–and–cow*. Arguably, while *earth-coloured-and-cow* and *brown–and–cow* have (at least in this world) the same semantic value, according to the neo-Fregean approach, they have different contents. The reason is that they have different conditions for something to be the semantic value of the concept. The condition for something to be the semantic value of *brown–and–cow* involves, *inter alia*, the object being of the colour brown, whereas the condition for something to be the semantic value of *earth-coloured-and-cow* involves, by contrast, the object being of the same colour as the earth. This means that, although their semantic values are the same, the content of the complexes is different, since the semantic rule would specify —in accordance with the conditions for something to be the semantic values of the constituents— different conditions for something to be the semantic value of the different complex concepts. Likewise, it should be emphasized that the role of a semantic rule cannot in all fairness be considered as *ad hoc* because, on the one hand, it can be seen as specifying, within the general framework of an IRS, the inferential relationship between constituent and complex concepts; and on the other hand, it can be conceived as being derived from the inferential patterns associated with primitive concepts, such as *conjunction*.[10]

3. Rationality and reverse compositionality

What we have seen is that, though compositionality is certainly a requirement that any theory about conceptual content should meet, the Fodorian has made no progress in showing that a neo-Fregean IRS based upon the notion of rationality has, as a matter of principle, any problem meeting such a requirement. However, the Fodorian can adopt a quite different strategy when faced with a defence of IRS. So far, the focus of attention has been compositionality understood as the *full* derivation of complexes from their constituents. That is, the direction of the composition at issue has been

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semantic values that serves to specify a particular pattern of inference as the possession condition of the concept. Likewise, nothing bears on the question of whether properties, or rather sets of objects, are the actual semantic value of a given concept. Again, what is important is that for each concept there exists a particular condition on semantic values whatever the preferred notion of semantic value. These clarifying remarks are owed to two anonymous referees for this journal.

[10] It goes without saying that the point as applied to *conjunction* structures must generalize pretty widely to the entire conceptual repertoire. For example, it would apply more generally, as Peacocke pointed out, to predicational combination. In this instance, the IRS theorist is committed to the view that "[t]here could not be a thinker who knows what it is for an arbitrary object to fall under the concept *F* [i.e. a thinker who possesses *F*] but does not implicitly grasp the semantic significance of the predicational combination of *F* with an appropriate first-level sense" (1992, p. 44). This means that IRS would account for predicational combination of any concept whatsoever, *F*, as a result of the inferential patterns already contained in possessing *F*.

bottom-up: from the constituents to complex concepts. As it happens, Fodorians have argued for a specific requirement with regard to the top-down direction of composition. If we take this requirement into account, we can see that the considerations offered so far are not enough for the defender of IRS to overcome the Fodorian criticism. What is really behind compositionality, so Fodor and his allies argue, is not only a (bottom-up) requirement that the (semantic and syntactic) properties of the complex be derived from the (semantic and syntactic) properties of the constituents. More importantly, they argue that it ought to be the case that the properties of the constituents be derived (top-down) from the properties of the complex. So, since IRS certainly grants bottom-up composition, the crucial question is whether under an IRS scenario there can be cases in which a complex concept is grasped without there necessarily being the ability to grasp the constituents. As Fodor and friends conveniently emphasize, the putative minds that would not live up to the requirement of the derivability of the constituents from the complex are virtually inexistent. They then argue that our understanding of compositionality itself must guarantee that such minds are virtually inexistent, as is indeed guaranteed by what Fodor and Lepore have called *reverse compositionality*. This is a principle according to which the constituents of a complex concept must contribute all of their (semantic and syntactic) properties to their hosts.

> Compositionality says, roughly, that its syntax and its lexical constituents determine the meaning of a complex expression; it's thus part of the explanation of why practically everybody who understands 'dog' and 'bark' understands 'dogs bark'. But it also needs explaining that you practically never find people who understand 'dogs bark' but don't understand 'dogs' or 'bark'. What we'll call *reverse* compositionality explains this by assuming that each constituent expression contributes *the whole of* its meaning to its complex hosts. If that's right, then if you understand 'dogs bark', it follows that you know everything you need to determine the meanings of 'dog' and 'bark': in effect, the meanings of the parts of a complex expression supervene on the meaning of that expression. (Fodor and Lepore 2001, pp. 365-6, their emphasis)

And hence, the threat to IRS is not really neutralized. The Fodorian claim, as previously noted, is that IRS cannot account for compositionality as long as it cannot account for the fact that complex concepts are *fully* constituted by their constituents. However, the precise sense in which this constitutes a problem for IRS is not that IRS cannot derive complex concepts from constituent concepts *at all*. Rather the situation is that IRS cannot do so in a way that guarantees reverse compositionality. Thus, if inferential roles are at issue, there could be a mind that grasps the content and syntactic structure of a complex concept and yet does not have the resources to derive the content and syntactic structure of the constituent concepts. The reason is that inferential roles do not respect reverse compositionality, and hence, that inferential roles do not compose in the right way. As things stand, this means that IRS cannot be true.

> Consider, then, the following mind: It knows that the extension of BLUE is the blue things; it knows that the extension of DOG is the dogs; it knows that the extension of BLUE DOG is the intersection of the extension of its constituents, but it *doesn't* satisfy the epistemic conditions on either BLUE or DOG (it doesn't know how to recognize blue things as such or dogs as such.) According to Peacocke's way of keeping score, such a mind would have BLUE DOG but neither BLUE nor DOG. [...] Well, there couldn't be such a mind; so we take this to be a reductio. (Fodor 2004b, p. 107, his emphasis)

A preliminary remark against the Fodorian considerations would be to stress the difference between knowledge of the semantic value of a concept and knowledge of what makes something be the semantic value of the concept. Thus, it is disputable whether the neo-Fregean would accept that the scenario is adequately described. Even so, Fodor's point should be well taken. As can be reasoned from Figure 1, it is certainly true that, according to the neo-Fregean view, the possession conditions of a complex concept —and hence the knowledge of the semantic condition associated with grasping the complex concept— may differ (perhaps greatly) from the possession conditions —and hence from the associated knowledge of conditions on the semantic values— of its constituent concepts. To this extent it is certainly *conceivable* that in the neo-Fregean framework a subject has a complex concept without having its constituent concepts,[11] and that is all that Fodor needs for his *reductio* to hold. However, it is interesting to analyse what is behind Fodor's argument. In the remainder of this paper I will argue, first, that if reverse compositionality (as presented by the Fodorian) rules out IRS as a theory of conceptual content, it also rules out almost any theory about conceptual content —notably including the informational theory favoured by Fodor and his followers. These considerations strongly suggest discarding reverse compositionality as a reasonable requirement on theories of conceptual content. Second, I will try to show that an IRS of the neo-Fregean sort can offer an alternative and arguably better account of the evidence that Fodorian reverse compositionality is purportedly designed to explain.

Let us focus then, in the first place, on reverse compositionality. To repeat, reverse compositionality says that the constituents of a complex concept contribute their whole syntactic and semantic properties to the complex. So, if the constituents contribute their whole syntactic and semantic properties and the complex is fully determined out of its constituents, there must be nothing in the syntax and content of the complex concept beyond that of the constituents themselves. What this guarantees is that, as a matter of principle, there is *reverse-compositional derivability* (RCD).

> (RCD) If a subject *S* understands the semantic and syntactic properties of a complex concept C_c, then *S* can derive the semantic and syntactic properties of the constituent concepts C_{p1}, C_{p2},…, C_{pn}.

Note that (RCD) captures well the sense in which IRS allegedly fails to satisfy the requirements of Fodorian compositionality. It is not that IRS systematically fails to make it possible for constituent concepts to be derived from complex concepts; IRS cannot fairly be charged with such a failing. As far as it accounts for the bottom-up direction of compositionality, IRS can account for such derivability in a considerable

[11] Notice that very little hinges on the question of whether the complex concept involves a recognitional capacity or not. The possession conditions of complex concepts and constituent concepts can differ even if both involve the *same* recognitional capacity. This is illustrated by the case of *brown—and—cow* in which the recognitional capacities involved in possession of the complex concept are the same as the capacities involved in possession of the constituent concepts, in spite of each concept certainly having different possession conditions. It is then conceivable that a subject has the complex concept without having the constituent concepts since there is nothing in possession of the complex concept that, as it were, logically entails possession of the constituent concepts.

number of cases, at the very least, those for which it is true that the subject has acquired the complex concept from the composition of the particular constituent concepts.[12] Rather, the alleged problem with IRS is that if it holds, then we can make sense of cases in which it is possible that, starting from complex concepts, the constituents of these complexes cannot always be derived. To repeat, the problem is that there are intelligible IRS cases that fail to satisfy (RCD), namely, those cases in which the subject is introduced to a complex concept and the rational capacities involved in understanding its content and syntax —e.g., knowledge of the semantic condition pertaining to *brown–and–cow*— do not suffice to derive the rational capacities involved in understanding the content and syntax of its constituents —e.g., knowledge of the semantic conditions for *brown*, *and* or *cow*.

It is interesting to remark, in passing, that (RCD), if true, would explain something close to the evidence (E'):

> (E') If a subject *S* understands the content and the syntax of a complex concept C_c —like *brown cow* or *pet fish*—, *S ipso facto* understands the content and syntax of its constituent concepts C_{p1}, C_{p2},…, C_{pn} —like *brown* and *cow*, or *pet* and *fish*.

This is puzzling because, for all intents and purposes, (E') is not at all the kind of evidence that we take as having on this issue. The kind of evidence that we are normally faced with is an empirical generalization along the lines of (E):

> (E) Typically, if a subject *S* understands the content and the syntax of a complex concept C_c, *S ipso facto* understands the content and syntax of its constituent concepts C_{p1}, C_{p2},…, C_{pn}.

But then, as far as anybody knows (including certainly the Fodorian), (E') is simply false. The reason is not only that, more frequently than is stressed, there are complex concepts that come from idiomatic expressions —*natural number*, *green fingers*, *safe house*, *hot dog*,…, and so, unsettlingly, on— but mainly because, intuitively, one can easily conceive of empirically possible situations that would falsify it. For instance, it could be the case that the subject, *S*, suffers from a psychological condition that makes him incapable of grasping the relevant constituent concepts. Alternatively, it could be that *S* has acquired the complex concept in particular contexts where only the complex concept is applicable, so that she would be quite at a loss in applying the constituent concepts in isolation.[13] Therefore, patently, (E') is false while (E) *ceteris paribus* is, as a

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[12] I take it to be beyond doubt that if a subject has acquired the complex concept by means of composing its constituents, then, barring dramatic memory disease, she can derive the constituents out of the complex.

[13] See Johnson (2006) for a detailed account of the falsity of a version of (E') in the linguistic case based upon an analysis of the telicity of verbs. Johnson identifies his version of (E') —one that says that we understand a complex concept only if we understand its constituents— with reverse compositionality itself. Even though I agree with much of Johnson's analysis, this identification seems to me misleading. On the one hand, even Fodor and allies should accept upfront that (E') is not at issue in the present debate if only because something akin to (E') sounds very much like a necessary condition on the possession of concepts which is quite hard to reconcile with the distinctly empirical flavour of any Fodorian enterprise. On the other hand, Johnson's strategy does not seem to be sufficiently aware of

matter of fact, commonly held to be true. Accordingly, the Fodorian is presenting a case in which the *explanans* requires more than the *explanandum*. The case could be made good, even if strange, if only (RCD) were true; but it turns out that it surely is not. As advanced, the problem is that it demands far more than any theory of conceptual content can reasonably be taken to provide.

In particular, the target theory of conceptual content that, according to authors of a Fodorian persuasion, should fit this mould, also falls short of meeting the requirement posed by reverse compositionality. This theory has received the name Informational Semantics (IS henceforth). IS takes conceptual content to be just the information that concepts carry in virtue of a nomological-cum-causal relation, where information is understood at the level of reference or denotation. It turns out, however, that even granting that conceptual content is informational, conceptual content does not, in and of itself, satisfy (RCD). The point here is one that Philip Robbins has already made in the slightly different context of linguistic meaning.

> Denotationalists [i.e., informational semanticists] find it easy to meet the requirement that meaning is [bottom-up] compositional. [...] Reverse compositionality is a different story. To see why, suppose we fix the meaning and the logico-syntactic form of 'pet fish': 'pet fish' means pet fish, and it's an intersective modifier-head construction. It does not follow that 'pet' means pets and 'fish' means fish, since it's consistent with these initial assumptions that 'pet' means fish and 'fish' means pets. In fact it's consistent with these assumptions that 'pet' and 'fish' mean anything at all, provided that the intersection of their meanings is pet fish. The possibilities are endless. For example, 'pet' and 'fish' could mean fish plus skyscrapers, and pets plus watermelons, respectively. (Robbins 2005, p. 261)

Clearly, Robbins's point applies equally to the conceptual case. It is perfectly consistent with understanding the syntactic structure and content of *pet fish* that deviant informational interpretations are given to *pet* and to *fish*. That is, such deviant informational interpretations are perfectly consistent with knowledge that the content of *pet fish* is the concept of an intersective modifier-head construction (syntactic properties) and that its content is the intersection of the content of *pet* and the content of *fish* so that it yields the informational content pet fish (semantic properties). What this shows is that the informational semanticist needs more than expected in order to accomplish the task posed by (RCD). Note also that the situation at hand is extremely similar to the one that served to call IRS into question. It is not that IS gets it systematically wrong about the top-down kind of derivability; it is rather that there are intelligible cases in which IS would fail to satisfy reverse compositionality. As the saying goes, what is sauce for the goose, is sauce for the gander. Thus, if we take the requirements of reverse compositionality seriously, then it rules out both IRS and IS, and for exactly the same reasons. What this strongly suggests is not that all our current theories of conceptual content are wrong, but that reverse compositionality is almost certainly not true.

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the difference between reverse compositionality —which is a thesis about content— and the evidence it is designed to explain —which is taken to be a fact about thinkers or language users.

4. Semantic rules back again

That reverse compositionality is not true is no great loss. Not least because it involves the task of explaining something that in fact needs no explaining, indeed something that is patently not the case, namely, (E') above. However, it is fair to wonder at this point how (E) can be explained. There are at least two alternatives. The first is suggested by Robbins himself (Robbins 2005, pp. 260-70). It consists of postulating something akin to principle (PAC) on the acquisition of complex concepts.

> (PAC) Typically, thinkers acquire complex concepts out of the composition of their constituent concepts.

What (E) demands follows trivially from (PAC). That is, typically, if a subject possesses a complex concept then she possesses its constituent concepts. This is because, if (PAC) is assumed, typically, we do not acquire complex concepts except by previously possessing the constituent ones. Under this proposal, the bottom-up sort of conceptual compositionality would be enough for explaining (E).

This strategy is, however, not very convincing as an *explanation* of (E). It is not only that (PAC) should be better warranted from an empirical point of view,[14] it also seems to me that there is a sense in which (E) involves the ability typically exhibited by rational thinkers to derive the constituents of a complex concept, *even* if not previously confronted with the given constituent concepts in isolation. But, mind the gap! This is certainly not the sense characteristic of what here I have called (RCD), that is, not the sense in which constituents contribute all their properties to their hosts. We have seen that (RCD) is not satisfied even by the informational view of conceptual content, which suggests that there is no (available) theory of conceptual content that satisfies it. Rather, the sense I have in mind has to do with the rational ability to recognize the mode of composition that yields complex representations. If there is such a sense, then an account of (E) can be given, and one that falls under the scope of neo-Fregean rationalist theories.

To illustrate this, consider again the concept *brown–and–cow* and the characterization given in Figure 1 above. This concept is one instance of an indefinitely large number of instances of the form *F–and–G* that can be presented to a subject who has not been previously and independently introduced to the content and syntax of the conjuncts. However, it is intuitively compelling to suppose that from understanding the syntax and content of the complex concept, a rational subject can unproblematically *derive* the content and syntax of the constituents. The explanation would be that the subject can so derive them because she has knowledge of the particular mode of composition of (conceptual) structures that contain *conjunction*. In other words, the derivation is explained because the subject is attributed the knowledge, not only of the particular content and syntax of the complex conjunctive structure, but also of the

[14] Fodor for instance (e.g., 2002) has suggested that it should be at least possible to learn the primitive concepts out of a corpus entirely constituted of complex concepts. The point is not that this would perhaps render support to reverse compositionality if it were true, as Fodor may intend; the point is that it is certainly moot whether (PAC) should be accepted on the basis of philosophical analysis alone.

particular way in which each constituent contributes to the content and syntax of the whole. This knowledge would be, as may be expected, knowledge of the semantic rule corresponding to the complex concept.[15] The following diagram [Figure 2] illustrates how the top-down derivation can be stated, from the point of view of the subject's rational capacity to identify the particular mode of composition.

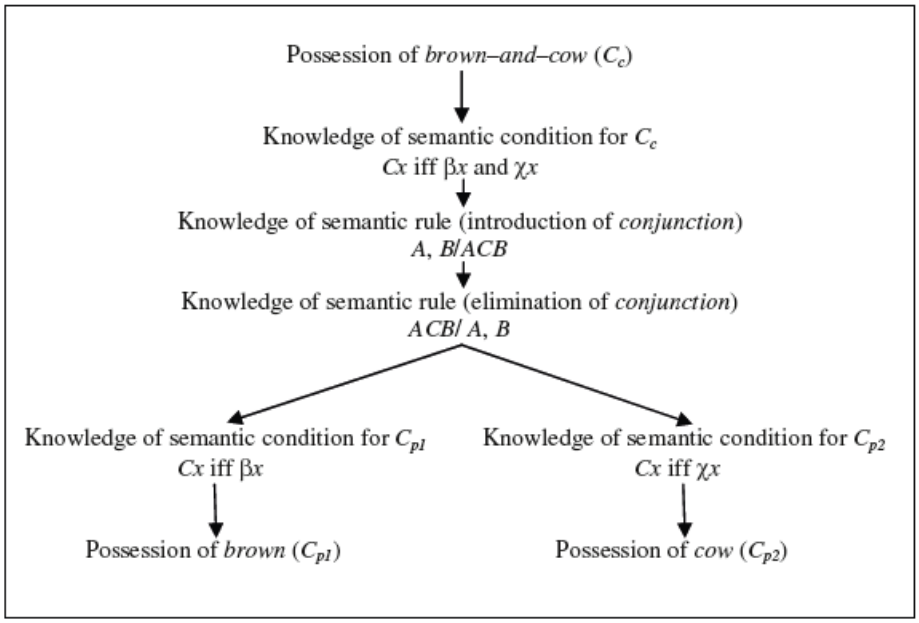

Figure 2. Derivability of constituents according to knowledge of a semantic rule.

The mode of composition corresponding to *conjunction* structures naturally involves application of the inferential patterns of *conjunction* when considering the composition of concepts but also, more importantly in this context, when considering conceptual *decomposition*. Note that the model represented in Figure 2 does not take into account

[15] I believe that such knowledge is closely connected to Robbins's diagnosis of what would be required for a semantic theory to satisfy reverse compositionality. "As far as reverse compositionality goes, it's not enough for a phrase to encode the meaning of its lexical parts. Compliance with PRC [the Principle of Reverse Compositionality] also requires that a phrase encode the derivational history of those meanings: that is, it must specify what each syntactic constituent of the phrase contributed to determining the meaning of the whole" (Robbins 2005, p. 267). Robbins takes it for granted that stipulating appropriate representations of this information would make it possible for *any* semantic theory to respect reverse compositionality. However, the kind of explanation I am concerned with here 1) as I will argue in turn, does not have such a stipulative *ad hoc* character, since it follows from the usual conception of compositionality, and 2) does not aim to establish reverse compositionality at all, but to explain (E) in terms of capacities typically exercised by rational thinkers. The solution presented here also departs from Johnson's (*vid.* Johnson 2006), which focuses on contingent features of language processing mechanisms.

whether the complex concept is directly fully constituted out of the contents and syntax of the conjuncts or not, whereas a criterion based upon reverse compositionality would require the complex to be thus directly and fully constituted. Indeed, in Figure 2 it is presupposed that no such direct compositional relation exist, since the top-down derivation can only be properly stated, if one adopts this approach, by mentioning the semantic rule governing the mode of composition specific to *conjunction*-structures.

This rule is, by definition, something over and above the syntax and contents of the constituents. Note also that this model certainly allows a subject to possess the complex concept without possessing the constituent concepts. The subject could —it is very unlikely in the case of *conjunction* structures but still possible— in the first place, lack knowledge of the semantic rule and, as a consequence, use the complex concept as a primitive one. On the other hand, in spite of having knowledge of the semantic rule, the subject could possibly fail to properly identify the contribution of each constituent to the complex. Of course, that the derivation of primitive concepts from the constituents is not guaranteed only shows that this explanation does not explain (E') above. However, it certainly is an explanation of (E) if we assume, quite palatably, that a *full* grasp of complex structures on the part of a rational subject involves a *full* grasp of the mode of composition or semantic rule of which the complex structure is an instance; and that full grasp of a mode of composition typically involves correct identification of the contribution of each constituent to the host. The long and short of it is that an account of (E) could be given on the basis of an analysis of top-down compositional derivability in terms of the rational capacities of thinkers exhibited through knowledge of the semantic rules governing the mode of composition of the complex.

It is important to stress that this is not an *ad hoc* explanation, since some may consider such an accusation. In effect, the Fodorian requirement that (E) be accounted for by the theory of compositionality itself and not by brute stipulation is clearly met. There is no stipulation in this conception of compositionality that top-down compositional derivability should be added to bottom-up compositional derivability. Rather, in this case we have not departed from the understanding of compositionality that the target IRS (and hence, accounts within a rationalist neo-Fregean framework) favoured in the first place. To recall, IRS can account for bottom-up compositionality because it appeals to the effect of particular semantic rules which, together with the (content and syntax of the) constituents, can fully determine the (content and syntax of the) complexes. Moreover, IRS thus appeals to such effects precisely because knowledge of semantic rules —in the context of specifications of the conditions for understanding or possessing concepts— clearly belongs to the scope of the inferential capacities of rational thinkers, which was supposed to be the subject matter of neo-Fregean IRS accounts. It is thereby all but natural to suppose that if, in order to understand a complex concept we need to know the mode of composition displayed by the appropriate semantic rule, then such knowledge is attainable when full mastery of the complex concept is reached. This knowledge can then be used to derive the constituent contents from which the complex concept is built up, even if we had never previously en-

countered the constituent concepts in isolation.[16] So, one may say that in this context bottom-up compositionality naturally leads to top-down compositionality and *vice versa*, which is probably the kind of situation that we, *pace* Fodorian anxieties, were looking for.

Conclusion

In spite of the criticism raised by Fodor and his followers against (neo-Fregean) IRS, a distinctive IRS account of compositionality can be consistently given by appealing to the rational capacities of thinkers. That is to say, by appealing to rational subjects' ability to determine modes of composition from knowledge of suitable semantic rules. Indeed, such a theory can be stated even if a case is made for a top-down sort of compositional derivability. In this case, such derivability would stem from the fact that typically, when a subject possesses a complex concept, then she also possesses its constituent concepts. If the analysis presented here is sound, then it shows that in this respect there is nothing that structurally, as it were, discredits neo-Fregean IRS theories of conceptual content. There are, to be sure, many problems to be faced by such theories, but I hope it is clear that compositionality is *not* one of them.

REFERENCES

Brandom, R., 1994. *Making It Explicit: Reasoning, Representing, and Discursive Commitments*. Cambridge, MA: Harvard University Press.

Chalmers, D., 2002. On Sense and Intension. In J. Toberlin (ed.), *Philosophical Perspectives 16: Language and Mind*, Blackwell, pp. 135-82.

Evans, G., 1982. *The Varieties of Reference*. Oxford: Oxford University Press.

Fodor, J.A., 1998a. *Concepts. Where Cognitive Science Went Wrong*. Oxford: Clarendon Press.

Fodor, J.A., 1998b. There Are No Recognitional Concepts —Not Even RED. In *In Critical Condition*, Cambridge, MA: MIT Press, pp. 35-47.

Fodor, J.A., 2000. Replies to Critics. *Mind & Language* 15(2-3), pp. 350-74.

Fodor, J.A., 2002. The Lexicon and the Laundromat. In P. Merlo and S. Stevenson (eds.), *The Lexical Basis of Sentence Processing*, John Benjamins, pp. 75-84.

Fodor, J.A., 2004a. Having Concepts: a Brief Refutation of the Twentieth Century. *Mind & Language* 19(1), pp. 29-47.

Fodor, J.A., 2004b. Reply to Commentators. *Mind & Language* 19(1), pp. 99-112.

Fodor, J.A., 2008. *LOT 2*. Oxford: Oxford University Press.

Fodor, J.A. and Lepore, E., 1991. Why Meaning (Probably) Isn't Conceptual Role. *Mind & Language* 6(4), pp. 328-43.

Fodor, J.A. and Lepore, E., 1992. *Holism: A Shopper's Guide*. Oxford: Blackwell.

[16] It should be emphasized that, under the proposed rationalist account, knowledge of semantic rules is intrinsically connected to (and perhaps just an instance of) the general neo-Fregean thesis according to which to possess a particular concept is to know what it is to be its semantic value (see section I above). More precisely, knowledge of semantic rules is naturally conceived as a case of knowledge about conditions on semantic values that is required in order to achieve *full mastery* of complex concepts. Nonetheless, as we have seen in the course of this discussion, there can be knowledge of semantic conditions on complex concepts, and hence possession of complex concepts, without there being knowledge of semantic rules when there is not full mastery of the complex in question.

Fodor, J.A. and Lepore, E., 2001. Why Compositionality Won't Go Away: Reflections on Horwich's 'Deflationary' Theory. *Ratio* 14, pp. 350-68.
Johnson, K., 2006. On the Nature of Reverse Compositionality. *Erkenntnis* 64(1), pp. 37-60.
Katz, J., 2004. *Sense, Reference, and Philosophy*. Oxford: Oxford University Press.
McDowell, J., 1994. *Mind and World*. Cambridge, MA: Harvard University Press.
Peacocke, C., 1992. *A Study of Concepts*. Cambridge, MA: MIT Press.
Peacocke, C., 2000. Fodor on Concepts: Philosophical Aspects. *Mind & Language* 15(2-3), pp. 327-40.
Peacocke, C., 2004. Interrelations: Concepts, Knowledge, Reference and Structure. *Mind & Language* 19(1), pp. 85-98.
Peacocke, C., 2005. Rationale and Maxims in the Study of Concepts. *Noûs* 39(1), pp. 167-78.
Robbins, P., 2005. The Myth of Reverse Compositionality. *Philosophical Studies* 125(2), pp. 251-75.

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