

Explaining intersubjectivity. A comment on Arie Verhagen, *Constructions of Intersubjectivity*

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1. Overview

Constructions of Intersubjectivity (CoI) is an important addition to the growing body of work on ‘cognitive’ and construction-based grammars, which *CoI* links to evolutionary issues in interesting ways. *CoI* also touches upon a number of fundamental (indeed philosophical) issues in the study of linguistic communication, meaning, and human cognition; it should be applauded for the explicitness with which it does so, using language as a ‘window on the mind’ (p. 210). A concrete vision of the evolution of language is endorsed, arising against the background of analyses of a number of seemingly disparate and scattered linguistic data. The book thus forms an excellent starting point to engage with foundational assumptions entering into the theoretical framework adopted. We will here equally embed our comments within a theoretical discussion at the level of frameworks.

The book begins by isolating a number of seemingly unrelated ‘small’ grammatical puzzles, which later gain a theoretical significance for certain ‘big’ theoretical issues. The ‘small’ grammatical puzzles concern negation (in particular the lack of functional equivalence in the use in discourse of *not impossible* and *possible*); whether finite sentential complements in copular constructions like *The danger is that depleted uranium is poisonous* are subjects or predicates; and discourse connectives (e.g., concessive conjunctions like *although*). These three construction types form the topics of Chapters 2, 3, and 4, respectively. Chapter 5 concludes the book. We here reverse the order of ‘small’ and ‘big’ and begin ‘big’, with some claims of linguistic anthropology.

2. Anthropological and evolutionary issues

Following Verhagen, using human language is essentially a manipulative activity: language is ‘fundamentally a matter of regulating and assessing

others' (9). Its use is 'never just informative, but always "argumentative"' (9–10); like animal communication systems geared at getting conspecifics to act in ways beneficial to the communicator (8), language is about getting things done rather than the disinterested representation of the world. Any such similarity between human language and non-human communication systems would be a welcome result, as it reduces the apparent gap separating human and 'animal language'. That said, while human language *can* be used to manipulate and getting others to behave as one desires, ever so often it is not so used, highlighting a crucial dissimilarity between human language and animal communication systems: we may as well use language to freely express our thoughts or ponder and assert the truth of something, without necessarily expecting particular functional benefits ensuing from that. Unlike in non-human communicating species there is no apparent cause or functional pressure for our deliberate decisions to assert what we do, and much functional pressure is needed to prevent them. Nor are we restricted in what we choose to refer to, assert, or communicate. Stuck in the immediate here and now, by contrast, as non-human animals by and large are, they only have a small number of non-voluntary vocalizations at their disposal, all intrinsically linked to an immediate adaptive purpose. No doubt human language use will seem somewhat pathological if all we say serves some instrumental purpose and is intrinsically linked to a certain response we wish to achieve. Interestingly, the descriptive and assertoric aspect of language is inescapable even where language *is* used manipulatively, as in making compliments to a lady, where unavoidably we are making a descriptive claim too ('what a beautiful perfume!').

The denial that human language exhibits the very features that romanticists like Schlegel, Herder, or Humboldt claimed to be so distinctive for it—its use for the free and creative expression of thought—also has an intellectual heritage we should be aware of. Assimilating human language to non-human animal communication systems was part and parcel of B. F. Skinner's (1957) vision of language, who flatly denied that language is used for purposes of reference, representation, or the assertion of truth, arguing instead that it is an instrument serving purposes of the control of behavior. In *CoI*, too, we read that language evolved as a mechanism producing 'pressure favoring long-term predictability of behavior' (14). *CoI* does not support a Skinnerian psychology, to be sure; nor does it claim that *all* language use is a function of strategic interaction. Yet it is not entirely clear how far removed its foundational claims about language are from Skinnerian views of language as an instrument of control. We think it is an obvious fact that language *is* used as an instrument of control. Our point is merely that (i) the opposite is equally true, (ii) *not*

so using it is actually a hallmark of human language that should be central in any account of its evolution.

We suggest that, more generally, the general assimilation of human to non-human 'language' on the basis of ascriptions of an evolutionary function to language, such as communication, will not lead to much insight in linguistic structure and its special character. To begin with, function ascriptions to whole, complex systems such as language don't typically transfer to the parts from which such systems are assembled: these will typically have independent evolutionary trajectories, unrelated to the function for which they are later employed in when entering the system of language. To whatever extent cognitive mechanisms entering language are used in non-humans, and have non-communicative functions there, language will not be rationalizable by looking at it as a communication system. Nor will the study of non-linguistic animal communication unlock the secret of what makes language special. If there is anything special to the human communication system, it is that it is a *linguistic* one, which means that its being a *communication system* cannot possibly be what as such explains its special features. The study of communication systems (Hauser 1996) does not tell us much about the special properties of human language, such as its structural and computational aspects, or the fact of its intentional and creative use.

Again, none of this means that the study of the communicative use of language will not let us see many interesting facts about language. *CoI* succeeds rather remarkably in unearthing such facts. This book's fundamental theoretical commitment however is deeper: that social and cultural cognition *alone* is the key to the understanding of language. The most basic explanatory notion in Verhagen's framework, used extensively throughout the book, is taken from Tomasello (e.g., 1999, 2003): the human ability to take others' perspectives (2), understand what they attend to, and share their intentions. On Verhagen's view this complex of mental reasoning abilities is the prime *biological* factor distinguishing us from other primates. Let a primate interacting manipulatively with others understand itself as an intentional agent, and have him ascribe intentional life to other agents as well; have him want to share beliefs and identify with the intentional mental life of others; then *culture* becomes possible, with its own special mechanisms of inheritance, since humans can now learn from others as opposed to merely from their own interactions with a non-human environment. With this, language is on its way, if not given, Verhagen suggests. For language simply *is* a system of conventions (of symbols and ways of using them) that solve a cognitive coordination problem. It is culturally transferred (3); and thus there is no biological adaptation specific to language needed. In sum, starting from the one

basic notion of taking another's perspective, language evolves—for the coordination and managing of multiple such perspectives in discourse.

3. Testing a hypothesis

What would be evidence for the correctness of such a view? What we need is independent empirical evidence that human language is optimized to some significant extent for the coordination task envisaged. A good degree of optimization is what testing any functionalist hypothesis in biology requires. In short, the hypothesis should be a particularly good source for predictions of mechanisms that we can then empirically attest. But note that even if this proves possible, the functional rationale of the mechanisms in question will not be their cause or origin. An independent story about the mechanisms will have to be told, as a mere hypothesis about functions will leave the question of origin (proximate causes) open.

Recognizing the need for validation above, Verhagen asserts that we must be able to see 'repercussions for the *content* that is systematically coded in linguistic symbols' of the capacity of understanding others as like oneself, in short 'read off' the *semantics* of basic linguistic units from their ways of handling perspectives:

[I]f coordinating cognitively with others is so basic a component of human practices, then we should see it reflected in more than one area of grammar [...] connecting, differentiating and "tailoring" the contents of points of view with respect to each other (rather than organizing a connection to the world) is essential for understanding their semantics [...] (p. 4)

Here we note a potentially wrong opposition, to which we will return several times: even granted that, generally, 'coordinating cognitively with others' is basic to human cognition, and this general principle of cognition is also instantiated in grammar, we don't see that there somehow exists an opposition between 'coordinating cognitively' and 'organizing a connection to the world', which entails that semantics cannot be understood as serving both functions simultaneously. We contend, in line with our 'anthropological' claims above, that it can and does.¹

We also note that there are potentially two different aspects of language that we might want to explain by appeal to their discourse function: sentence-internal organization on the one hand, and discourse phenomena transcending the sentence-boundary on the other. By sentence-internal organization we mean the structure of the clause, the organization of phrases and their dependents, and syntactic mechanisms like complementation. Sentential connectives and discourse conjunctions

fall into the class of discourse phenomena. The complementation construction in (1) illustrates the first one; (2) is an example of an inter-sentential or discourse phenomenon:

- (1) George saw/knew/said that his opponent was closing in.
- (2) Max fell. John pushed him.

Clearly, it is discourse phenomena that we expect a discourse-based perspective to elucidate best. It is much less clear that such a perspective would illuminate sentence-internal and syntactic organization. Verhagen's striking claim is that a perspective departing from discourse and cognitive coordination shows us that both central semantic *and* syntactic analyses of particular linguistic constructions have been mistaken.

Now, in (2), the two sentences are obviously semantically connected (even though they are not parts of one another, in a phrase-structural sense, as in the construction (1)). To understand (2), it has to be *inferred* that the event order is the reverse of the sentence order, and it is only by applying causal knowledge (pushing can be a cause of falling) and a general inference principle (no other possible cause is mentioned, whence one must assume pushing is the only operant cause) that the listener can construct the corresponding event structure. The speaker need not supply explicit information about the intended event order since he knows that the listener is able to compute this herself. This is in fact a general fact about discourse production and understanding: it is both impossible and undesirable to supply all relevant information in linguistic form and both speaker and listener therefore appeal to general principles in computing that information from the linguistic material given. So the principles driving the understanding in cases like (2) are not specifically linguistic ones: they are more generally cognitive, logical, or inferential ones (examples will be seen below). Again, we expect this to be different in (1), where we meet a hypotactic construction missing in (2), in which, at least on a standard syntactic analysis, *that his opponent was closing in* is the internal argument of *saw* (see below for more on this structural claim). It is therefore more plausible that 'cognitive coordination' in discourse could potentially tell us much about (2), but little about (1).

4. Negation and discourse connections

Let us see whether this is so and begin with the observation that clearly the discourse in (2) is about the world, *and* involves a large amount of cognitive coordination, exemplifying language's potential, insisted on above, to serve *both* of these functions simultaneously. The difference between the general fact about discourse understanding just noted and Verhagen's

claims is that he argues for the existence of specific grammatical constructions whose purpose would lie *precisely* in cognitive coordination, and whose semantics would not be explainable *otherwise* (or on more traditional semantic assumptions) Verhagen considers that negation is an instance of such a construction, and this is the topic of Chapter 2, to which we now turn.

We will give a slightly more formal treatment of Verhagen's examples in *CoI*, to see whether negation can indeed be used in building a case against semantics as 'organizing a connection to the world'. We first summarise Verhagen's take on negation, with page numbers to where Verhagen states his views:

- a. the primary function of negation is intersubjective cognitive coordination (42, bottom of page)
- b. the relation between language and the world is only secondary (42, bottom of page)²
- c. negation is concerned with the relation between distinct 'mental spaces' of participants in discourse (57)
- d. more specifically, the speaker uses negation to instruct the addressee to entertain two distinct mental spaces, one of which has to be rejected (42, bottom of page)
- e. these mental spaces may incorporate 'topoi', collections of culturally determined default rules (58).

Now consider the following three example discourses:

- (3) A. Do you think our son will pass his courses this term?
B. Well, he passed them in the autumn term.
- (4a) A. Do you think our son will pass his courses this term?
B-a. Well, he did *not* pass his first statistics course.
- (4b) A. Do you think our son will pass his courses this term?
B-b. Well, he *barely* passed his first statistics course.

The general principle behind understanding such exchanges is that, instead of giving a direct answer, B invites addressee A to activate a defeasible rule in her semantic memory (cf. the 'topoi' mentioned under e. above) and to perform an inference based on the rule and the information supplied by B. Thus in example (3), A must retrieve a defeasible rule of the type 'normally, if a student passes his exams in term n , then also in term $n + 1$ ', and apply modus ponens using B's observation about the autumn term. Things get really interesting in example (4a). Here B invites A to activate a defeasible rule like 'normally, if a student passes his first statistics course, he can pass other courses as well' and apply an inference

using his utterance B-a. That the rule *is* defeasible can be seen from the possible continuation of (4a) in (4a*):

- (4a*) A. Do you think our son will pass his courses this term?
B-a. Well, he did *not* pass his first statistics course.
A. But he got a very good grade for the astrophysics course!

A more formal analysis of these examples goes as follows.³ A defeasible rule is an implication of the form ‘if *P* and nothing exceptional is the case, then *Q*’. Here *P* can be the proposition ‘a student passes his first statistics course’, and *Q* the proposition ‘he can pass other courses as well’. Using this representation, one may disentangle the coordinating and world-relating functions of ‘not’. First off, sentence B-a has a dual function: it states a fact *and* it triggers an inference process that allows A to deduce B’s opinion on the relevant issue. Sentence B-a can have this dual function because the inference process that it triggers has certain universal features which are common knowledge of A and B. Namely, the inference is a form of *closed world reasoning*, a form of logical reasoning which is different from classical logic but which is all the time applied in discourse understanding (see van Lambalgen and Hamm 2004). The logical principle invoked here is: assume all propositions are false which you have no reason to assume to be true. One can make sense of (4a) by invoking this principle twice. First the defeasible rule, written fully as ‘if a student passes his first statistics course and nothing exceptional is the case, he can pass other courses as well’ is reduced to ‘if a student passes his first statistics course, he can pass other courses as well’, because no information about exceptions is supplied in the discourse. Secondly, no other sufficient conditions for passing the other courses are given, so that the rule is actually an equivalence, and utterance B-a can be used to derive the intended conclusion ‘he will not pass all his courses this term’. Note that without invoking closed world reasoning, the inference that B implicitly appeals to in (4a) is the classically invalid ‘denial of the antecedent’. In (4b) the suggestion is that if a student *barely* passes a statistics course, then one actually has an exceptional circumstance. Therefore the previous reduction of the defeasible rule no longer applies, and the inference using utterance B-a fails.

The defeasible character of the inferences involved is brought home further by the discourse (4a*), where the function of the utterance ‘But he got a very good grade for the astrophysics course!’ is precisely to highlight a second defeasible rule: ‘if a student passes an astrophysics course and nothing exceptional is the case, he can pass other courses as well’. In this case the second application of closed world reasoning fails, thus rendering invalid the conclusion previously drawn. The circumstance that

conclusions from logical arguments may have to be withdrawn when new information comes in, may have reinforced the impression that ‘organizing the connection to the world’ is of minor importance in language use. But in actual fact, these discourses are all about one’s best guesses about the state of the world. We conclude, then, that at least with respect to sentential negation, the general framework of non-monotonic logic elegantly captures the data in question, and the uniqueness implied in Verhagen’s claims about the need for a functional explanation is without support. Note that non-monotonic logic is not intrinsically a framework for reasoning in an *intersubjective* context at all: we find the same principles of reasoning in other cognitive domains such as planning, hence their rationale is not purely in cognitive coordination, leading to further doubts about the foundational assumptions used.

Another example in the same vein is taken from Chapter 4, on discourse connections. Consider Verhagen’s discussion of *although* and *but* on pp. 167–174. He mentions the following general explication of the meaning of ‘although’ (167): ‘*p although q*’ means: (a) truth conditions: *p* & *q*; (b) presupposition: *q* implies not-*p*. Here ‘presupposition’ means that if ‘*q* implies not-*p*’ is not yet present in the discourse, it must be introduced (‘presupposition accommodation’). Verhagen correctly notes that if ‘*q* implies not-*p*’ is formalised as the material implication of classical logic, (a) and (b) are in immediate contradiction, and then after some discussion draws the following moral: ‘What is especially important to avoid the derivation of contradictions, even if the defeasibility of generalizations is recognized, is that a background *mental space*, distinct from that of the speaker/writer, is invoked in which the shared *topos* is construed as a basis for a causal inference (168).’

A formalisation in non-monotonic logic again shows that we can remain agnostic about the necessity (and precise form) of mental space representations. We shall provide representations for ‘although’ and ‘but’ using the defeasible conditionals introduced above. These feature a conjunct ‘nothing exceptional is the case’, which we shall formalize here as ‘not-*ab*’ (where ‘*ab*’ is a proposition letter indicating some abnormality):

‘*p although q*’ means: (a) truth conditions: *p* & *q*; (b) presupposition: *q* & not-*ab* implies not-*p*.

‘*p but q*’ means: (a) truth conditions: *p* & *q*; (b) presupposition: *p* & not-*ab* implies not-*q*.

In both cases (a) and (b) are consistent, and jointly entail the derivation of an abnormality. Thus, if someone utters ‘*p although q*’, he contributes a variable for an abnormality to the discourse, which can be unified with

a concrete circumstance. E.g., ‘He failed his exam, although he worked very hard. He was sick on the day of the exam.’ The second sentence is read as an instantiation of the abnormality pointed at by the first sentence. No special machinery for mental spaces needs to be adopted; it suffices to apply to general principles for discourse coherence such as the introduction of variables to be unified with linguistic material.

5. Cognitive significance

Before we continue with our discussion of linguistic matters and return to the issue of sentential complementation in the next section, there is a methodological point we want to raise: the use of ‘formal’ representations in cognitive linguistics, especially Verhagen’s use of Fauconnier’s theory of ‘mental spaces’ in explaining the function of negation. We presented a formal analysis of Verhagen’s examples involving negation in non-monotonic logic, without first explaining Verhagen’s own ‘mental space’ analysis. We did so because we have severe doubts as to the adequacy of such analyses in a cognitive context. We fully agree that the most productive way to do linguistics is to relate it to human cognition as a whole. But what makes a particular piece of *linguistic* analysis also *cognitive*?

Let us pause to consider this important question in some detail. At the outset of modern linguistics in the 1950s a demand was imposed on theories of linguistic competence according to which such theories should be ‘explicit’. That is, they should not rely on badly understood and question-begging notions such as ‘understanding’, ‘intending’, or ‘grasping the meaning’. In practice, explicitness meant to give such psychological processes a computational or algorithmic description.⁴ Adopting this methodological decision, a given semantic analysis of a natural language should employ representations that have well-defined formation rules, and the mapping between syntactic and semantic representations should be computationally transparent.

Note that a purely semantic analysis of a linguistic phenomenon can as such be considered to be successful if it gets the truth conditions of sentences and entailments between sentences in context right. Here, one does not put any demands upon the semantic representations used except that one can meaningfully speak of entailments between them. Although this demand is by no means trivial, it does not yet suffice for explanatory significance in the context of a study of human cognition. We do not wish to imply that only pointing at a neural substrate suffices for a demonstration of cognitive reality. Clearly, a given linguistic analysis can stand on its own feet and does not need validation from neuroscience.⁵ Yet, the concepts and entities used in abstract syntactic and semantic representations

must at least not be in conflict with known constraints on the processing of these structures or their storage in long-term and working memory, for example.⁶

The simple point we want to make here is that this integration of fields of inquiry operating at different levels of abstraction (i.e., linguistic and neurological) depends on the explicitness of the computational descriptions involved. In particular, semantic representations need to be mathematically definite enough to be used in algorithms. We have strong doubts that this desideratum is met by Fauconnier's theory. The analysis of negation presented above in terms of non-monotonic logic goes some way toward fulfilling these desiderata, since, as is shown in Stenning and van Lambalgen (2008), the proposed system has considerable cognitive significance, including an appealing neural implementation.

6. The complementation construction

Let us now return to sentential complementation constructions such as (1). Verhagen's suggestion (Chapter 3) is that sentential complementation is a special purpose construction that, again, intrinsically serves a coordination aim. Verhagen claims that (1), repeated here as (5), is fundamentally different in structure from a construction like (6):

- (5) George knew/saw/said that his opponent was closing in.
- (6) George knew/saw/said something.

That is, it is wrong to construe (5) as a 'transitive construction' on the basis of a mere analogy with (6). In particular, he argues that the embedded clause in (5) is not a syntactic constituent or verbal argument (p. 83). Rather, (5) is a 'construction' in its own right, a holistic template with irreducible sound and meaning properties (p. 79) that doesn't follow from any 'general' phrase-structural rules.

However, no structural analysis of the sentences in question is actually provided in this chapter, and no definition of what it would be for the *that*-clause to be a 'constituent' is provided. Clearly, a structural analysis is not ipso facto provided once certain functional claims are made: the mechanisms underlying certain functions are a logically independent issue. But standard tests for constituency suggest that we can question the *that*-clause, as in (7), or elide it, as in (8):

- (7) George saw/knew/said *what*?
- (8) George saw/knew/said that his opponent was closing in, and Bill saw/knew/said so too.

Verhagen's conclusion by contrast is rather exclusively derived from claims about differences in discourse functions of (7) and (8), which we claim is a logical error and fails to provide any independent *evidence* for the functions used to an explanatory purpose.

In addition, a wrong opposition arises again. Let it be true that (5) indicates a 'perspective' in the matrix clause, and that a thought is being 'perspectivized' in the embedded one, as Verhagen argues. This observation appears fully consistent with the *that*-clause in (5) being a constituent that is the complement of the matrix verb. To the extent that there is a difference between (5) and (6) in the functional respects just noted—although that difference is not obvious to us—it can *follow* compositionally from the difference in the two complements of the matrix verb, which after all differ, in syntactic category and Case. Again, independent evidence is needed for a difference in structure between (5) and (6)—evidence not simply predicated on the functionalist hypothesis made.

Contrary to the claims made in this chapter, a standard generative constituent structure analysis of (5) would *not* proceed merely from an intuited 'analogy' or 'relatedness' between (5) and (6) (as stated on p. 87). It would also not proceed by a 'top-down' analysis (p. 82). On the contrary, it would build such a structure from the bottom upwards, beginning with the minimal assumption that *saw* and the CP in question must be somehow *merged* with one another, giving rise to a structure of the general form [X Y]. Assuming in addition to that minimal requirement that in human language, phrases are *headed*, one of X and Y will have to be the head, H, which thus 'projects', with Y becoming its complement or internal argument. The result is then as a whole predicated of an external argument, Z (i.e., *George*). In this way we derive that the common underlying structure of (5) and (6) is indeed [Z [X [Y]]], an analysis making the rather minimal assumptions that:

- (i) human language is combinatorial (there is a recursive operation merging constituents),
- (ii) the organization of expressions is hierarchical (it contains phrases over and above lexical items),
- (iii) phrases are headed (Merge(X, Y) is of type X or else type Y), and
- (iv) branching is binary (Merge takes two arguments).

This analysis moreover does not automatically assume the possibility of generalizing over clausal and nominal structures: it does not *refer* to any such constructions, which are not even visible for a minimal analysis that appeals to abstract notions such as head, complement, internal argument, and external argument, alone. So it also does not predict that in all

contexts nominal arguments can be inserted where the putative clausal arguments can be, which is the prediction that Verhagen (pp. 83–85) provides evidence against.

It is neither clear to us why double object constructions like *They warned us that the profit would turn out lower* would support Verhagen's viewpoint (see p. 86), nor why inversely linked predications of the type in (7) and (8) do:

(7) [The danger] is [that the middle class feels alienated].

(8) [That the middle class feels alienated] is [the danger].

We here briefly discuss only the latter case. The problem posed by Verhagen is that more than hundred years of analysis could not settle whether the *that*-clause in (7)–(8) is a subject or predicate. But perhaps this is a wrong dilemma. It may precisely be a feature of these constructions that they are organized around a symmetrical predicational relation between two XPs in a Small Clause (SC) as in (9), in a way that *either* of them can raise to a sentence-subject position in front of the auxiliary, resulting in either (10) or (11) (see Moro 2000):

- (9)
-
- (10) SUBJECT [BE [_{Small Clause} [The danger] [that the middle class feels alienated]]]
- (11) SUBJECT [BE [_{Small Clause} [The danger] [that the middle class feels alienated]]]

Neither the CP nor the DP in (9) are the head in the Small Clause (or ‘project’), which explains their symmetry, and potentially the fact that either of them can raise out of the Small Clause.

7. Constructions as such

Above we appealed to a minimal computational machinery in terms of binary Merge, which led us to the scheme [Z [X [Y]]]. An argument for using a minimal phrase structural analysis generated by a recursive operation

Merge is that we *need* some account of the recursive machinery of language (unless recursivity is denied, which it is not in the present volume). If one assumes a minimal conception to account for recursive structure building (Merge on its current ‘minimalist’ construal is such a candidate, see Hinzen 2006), the question whether there is a ‘complementation construction’ and whether or not it is identical to a ‘direct object construction’ (p. 86) cannot even be formulated. Merge is too primitive to be sensitive to such categorial distinctions, giving us a much simpler vision of the linguistic system’s basic computations. The question is whether this is a bad or a good result.

The claimed achievement of the Principles and Parameters framework, incorporated into Minimalism, was that constructions as we can perceive them in languages at a descriptive level can be shown to follow from more abstract generative principles which are neither language-specific nor construction-specific. Thus, what we called the ‘complementation construction’ above is simply the overt consequence of Merge plus the fact that some heads subcategorize for an object that is semantically a proposition. This, *if* feasible, *is* a desirable view, we contend, because the abstract generative principles in question, *if* indeed minimal, have to be part of anyone’s account; and because having constructions as merely the overt result of deeper, fewer, and more abstract structure-building operations is both explanatorily beneficial and in no conflict with the fact that they take up distinctive discourse functions when used. From an evolutionary viewpoint, too, a minimal and construction-free grammar (that remains descriptively adequate) should be welcomed: it allows to accomplish more (a great variety of linguistic constructions) with less (minimal structuring principles cutting across constructions), which is arguably in line with general principles of economy and conservativity in biological evolution.

8. Perspective-taking

As noted, Verhagen doesn’t deny recursion, but places it outside language, in perspective-taking, which as such, he argues, is ‘inherently recursive’ (p. 98). That sentential complementation constructions are paradigmatically recursive is on his view only a sign for the fact that they are the ‘grammaticalization’ of this basic human cognitive capacity. The problem with this account however is that to our knowledge there is no evidence for recursive perspective-taking *outside* human language; ipso facto we cannot invoke perspective-taking to *explain* language, and the direction of explanation might precisely have to be reversed, unless there is a common cause of both. Furthermore, ‘taking a perspective on something’

can—although it need not—involve what philosophers traditionally have called a *propositional* attitude. It need not, since it has been observed in false belief tasks that while a child may take the wrong perspective (namely its own) in propositional terms, it takes the right perspective in *behavioural* terms, e.g., by looking at the right spot (Clements and Perner 1994). That is, the notion of perspective as such is consistent with both propositional and non-propositional mental representations; it doesn't explain why it should be the case that we take propositional perspectives or why such forms of thought exist. Although there *are* some claims for propositionality in non-humans (Seyfarth 2006), there are also strong ones against it (Terrace 2005), and the notion of propositionality invoked in the former claims is too broad to illuminate the specifics of human clause structure and the propositional meanings that sentential constructions have. There is also evidence that the understanding of sentential complementation is actually itself an instrumental causal *factor* in the genesis of 'mind-reading' and how the child forms explicit propositional representations of false beliefs, a task that is not mastered before sentential complementation itself is (De Villiers 2005). All of this indicates that Verhagen's bold attempt to explain language from social cognition may well—at least partially—have the cart before the horse.⁷

9. Meaning

We close with a general observation on the philosophy of meaning assumed in *CoI*. If the meaning of linguistic expressions is inherently and necessarily linked to their discourse purpose, we face consequences such as that an assertion of *There are seats in this room* implies a presupposition having to do with the seats being comfortable, as Verhagen asserts (15). But obviously, there can be assertions about seats in rooms where these seats fail to be comfortable. Hence, the implicature is a mere contextual one, and ipso facto not an *inherent* (non-contextual) aspect of the expression in question. Is the claim the radical one that there are *no* such inherent aspects of the meaning of an expression at all? If it isn't, a non-contextual notion of linguistic meaning as determined by linguistic form needs to be preserved on which the compositional process of meaning determination would be based. If it is, that would entail giving up the compositionality of meaning, which depends on the availability of a context-independent notion of meaning that is determined by the syntactic part-whole structure of the expression in question (see Fodor and Lepore 2002). We may be wary of giving up this widely endorsed constraint, as it seems needed to explain the forms of recursivity that language exhibits. Note that to whatever extent we endorse compositionality

as a principle for the generation of meaning, meaning will not be ‘conventional’: meaning will follow by necessity from algebraic laws of phrasal composition, in much the way that 5 follows from composing 2 and 3 by means of the operation ‘+’.

Note, also, that if the meaning of a sentence is spelled out by appeal to its argumentative consequences, it will be the case that there is nothing to rationally *explain* why we endorse the inferences we do. If we want to justify moving from ‘A&B’ to ‘A’, say (or claim classical validity for this move), part of what we will appeal to is the meaning of ‘&’ (and our grasp of that meaning). We couldn’t justify the classical rule of conjunction elimination, say, by the existence of a causal mechanism carrying us from premise to conclusion, or the desirability of the result, or the force of a drug that we take. By consequence, an independent notion of meaning is needed, even if an argumentation-oriented perspective is adopted, and meaning can’t consist in argumentative consequences alone.

10. Conclusions

Summarizing our main claims, we believe that while the data that *CoI* unearths are rich and certainly *need* explanation, they *have* an explanation in more traditional formal semantic or syntactic frameworks which are implicitly rejected in *CoI*. In short, the data do not support either the analyses provided or the foundational assumptions about language endorsed. Again, we see no conflict between older ‘representational’ or ‘disinterested’ perspectives on the use of language, and observations on the discursive functions that linguistic expressions may serve. We also see a danger in one-sided perspectives on language that leave out some of its distinctive features. Coordination in discourse and manipulative communication are very clearly vital functions of language, and taking this as our starting point many important phenomena of language may come to the surface: we fully concur with Verhagen on this issue. But their explanation will be another question.

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Notes

1. Figure 1.2 on p. 7, as one referee notes, may suggest that Verhagen recognizes both factors. But the claim made is that special foundational significance attaches to the former function and that negation and complementation illustrate this, and we dispute this.
2. Since the two first points are important in what follows, it is worthwhile to quote Verhagen directly: ‘[T]he linguistically most relevant properties of negation, the ones that it

- shares with other elements in the same paradigmatic class, are purely cognitive operations' (p. 57).
3. Here we follow the analysis of defeasible conditionals given in Stenning and van Lambalgen (2006). The interested reader is referred to this paper for a fully formal treatment of phenomena related to the ones discussed here.
 4. 'Algorithmic' is taken in a wide sense here, and also includes computations in neural networks.
 5. Empirical linguistic arguments for a universal argument-adjunct distinction, for example, are not empirically invalid if we can't link or translate the primitives used in the analysis to primitives of a neurobiological description.
 6. Together with constraints flowing in this particular direction (Dabrowska 2004), it is an equally reasonable proposal at this point that linguistics may and should impose constraints on neuroscience. That is, explicit linguistic proposals for computational processes underlying language should be the basis for evaluations of (and predictions for) neuroscientific experimentation (see e.g., Stockall and Marantz 2006; Poeppel and Embick 2005; for such a perspective for the case of syntax, and Baggio and van Lambalgen 2007 for the case of semantics).
 7. One referee claims that it is no objection to Verhagen that 'there is no evidence for recursive perspective-taking outside human language', since Verhagen precisely claims that perspective taking is what makes humans differ from other animals. The point however is whether it explains language, and recursion therein. For this it needs to have the relevant formal properties (propositionality, recursivity) independently of language.

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