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Published in:
A coat of many colours

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Final author's version (accepted by publisher, after peer review)

Publication date:
2018

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Zwart, J-W. (2018). Linguistics and reality. In J. Ceuppens, H. Smessaert, J. van Craenenbroeck, & G. Vanden Wyngaerd (Eds.), *A coat of many colours* (pp. 1-4). KU Leuven.

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Linguistics and reality

Jan-Wouter Zwart

1. Let us assume that a *faculty of language* exists, a human cognitive capacity that is the object of study of formal linguistics (Chomsky, 2005). The faculty of language is what allows humans to produce and interpret linguistic utterances, and since the number of these utterances is infinite, the faculty of language must include a generative system.
2. In describing this generative system, formal linguistics makes use of a technical vocabulary, in terms of which aspects of the generative process are defined (such as *Merge*, a process combining elements, and *Move*, a process re-defining an element's position), including a nomenclature for elements generated and their position (such as *VP* and *Spec,TP*). The question I want to raise here is whether the elements denoted by this vocabulary are in any sense real.
3. At first glance it may seem pointless to first assume the reality of the generative system, and then doubt the reality of *Merge*, *Move*, *VP*, or *Spec,TP*. Especially if we are willing to grant that the properties of the faculty of language have been described successfully with the use of concepts like *Merge*, *Move*, *VP* and *Spec,TP*. But there is a parallel here with the natural sciences, which have been phenomenally successful in describing the physical world using the concepts of mathematics, such as numbers, functions, and sets, and still there is a debate in the philosophy of mathematics as to the reality of these mathematical concepts (Leng, 2010).
4. In the philosophy of mathematics, an opposition exists between platonism and fictionalism, the former accepting the existence of numbers, sets, and relations as abstract objects, the latter denying the existence of abstract objects, and hence also the existence of numbers, sets, and relations (see Balaguer (2011) for an overview of fictionalism in the philosophy of mathematics). On the fictionalist approach, the reason mathematics can still be successful in describing the physical world, is that mathematical concepts are fictions that function in the description of reality in the same way as metaphors function in everyday commu-

nication. (For example, the location of Reggio Calabria in Italy can be described metaphorically as 'in the toe of the boot', referring to the shape of Italy, and this description can be as correct or false as any other; denying that the boot exists does not affect the existence of Reggio Calabria or our understanding of its location.)

5. That the question of the reality of linguistic concepts is similar to the question of the reality of mathematical concepts is suggested by the observation that *Merge*, as commonly understood, creates a set — a mathematical concept e.g. Chomsky (2005, 11). Likewise, the hierarchical relations among syntactic phrases can be described in terms of the mereological relation of inclusion, itself definable in set theoretical terms (Lewis, 1991). It stands to reason, then, that linguistic concepts such as *Merge*, *Move*, *VP* and *Spec,TP* should be included in the fictionalism/platonism debate.

6. One way to interpret fictionalism in mathematics is to hold that statements about mathematical concepts (such as '4 is even') cannot be true, since such statements predicate over elements that are not real. However, even if we deny the reality of mathematical concepts, there appears to be a qualitative difference between statements like '4 is even' and 'a prime can be divided by 4', a difference that has been described in terms of truth or falsehood 'within the story of mathematics' (Field, 1998; Balaguer, 2009; Leng, 2010). While this leaves open what that truth is grounded in, within the story of mathematics, we can assume that it carries over to linguistics, so that the fictionalist approach does not lead to the conclusion that all statements of (formal) linguistics are a fortiori nonsensical, as long as we understand what these statements are grounded in.

7. The faculty of language allows the language user to connect sound (or some other externalizing modality) and meaning, not a trivial task. To analyze this process for any given sentence, the formal linguist must come up with an optimal resolution of the diverging or conflicting requirements of sound and meaning representations. Call such a (hypothetical) resolution a syntax. As is well known, the description of a sentence's syntax in current formal linguistics is rife with metaphor, including the imagery of structure building (*Merge*) and transformation (*Move*). A fictionalist approach to linguistics entails that these processes (i.e. *Merge* and *Move*) are not in any sense real, even if they are part of a phenomenally successful analysis of the human faculty of language.

8. This is not to say that linguists should refrain from employing terms like *Merge* and *Move* in syntactic analysis. From a fictionalist point of view, these processes

are metaphorical, and hence not real, even in the most successful scientific analysis of the faculty of language (which, as stated above, we assume is real and not fictitious). I am not arguing for an approach to syntax that does not make use of either *Merge* or *Move* or both. Our best attempts at describing linguistic reality will inevitably make use of metaphorical concepts, just like our best attempts at describing physical reality will inevitably make use of the metaphorical concepts of mathematics.

9. I do however see two nontrivial consequences of the fictionalist approach to linguistics. The first consequence has to do with the vexing concept of 'psychological reality', and has implications for the transfer of linguistic analysis to adjacent disciplines such as psycholinguistics (including the study of the acquisition of language) and neurolinguistics. A platonist approach to linguistic analysis, when a phenomenon is described, say, in terms of 'V-to-I movement' or an 'OV base structure', would lead to the expectation that these processes and configurations are detectable in psychological or neurological data. On a fictionalist approach, on the other hand, we do not expect any physical correlate of these processes and configurations, as they merely function in a model of (a state of) the faculty of language. (There may be some correlate, but we have no idea what it looks like, and we can certainly not expect it to involve a physical displacement, for instance.)

10. The second consequence of the fictionalist approach to linguistics has to do with the evaluation of syntactic analyses. On a platonist approach to linguistic analysis, where 'V-to-I movement' is real, the propriety of 'V-to-I movement' is motivated in large part by the data (the position of V with respect to other elements indicating the effect of movement). On a fictionalist approach, the propriety of 'V-to-I movement' can only be motivated conceptually, i.e. by whatever we believe truth 'within the story of linguistics' is grounded in. This is because statements about elements and processes that feature in the analysis can only be judged true (i.e. escape the verdict of being nonsensical) if they are somehow inevitable within the conceptual framework.

11. I will not attempt here to be more concrete about what the concepts of linguistic analysis should be grounded in. But the parallel with mathematics suggests that there ought to be a basis to the 'story of linguistics' that has a similar quality as the accepted mathematical axioms — to use the terminology of Field (1998). To give a possible example, I have suggested elsewhere (Zwart, 2017) that the generative procedure assumed in the model of grammar involves a process that turns an unordered set Σ — the Numeration of Chomsky (1995) — into

an ordered n-tuple (Fortuny, 2008), essentially by merging $\alpha \in \Sigma$ with Σ , yielding $\{\alpha, \{\alpha, \beta\}\}$ (if $\Sigma = \{\alpha, \beta\}$), which is the set-theoretical definition of the ordered pair $\langle \alpha, \beta \rangle$ (Kuratowski, 1921); the operation can be repeated on any remaining unordered set, yielding an ordered n-tuple in the end). In a similar vein, we may assume that the number of primitives and concepts used in the model of grammar is limited, explaining the predominance of recursion in the system, if Jaspers (1998, 81) is correct.

12. If we assume that this is the process of structure building, both the process and the structure can be described in terms that are grounded in more fundamental concepts outside the study of language, and in that sense inevitable. To illustrate, note that the move from $\{\alpha, \beta\}$ to $\langle \alpha, \beta \rangle$, via $\{\alpha, \{\alpha, \beta\}\}$ removes the question of which 'copy' of α should be spelled out; the interpretive components dealing with sound and meaning will see only the ordered pair, so that the question of selective spell-out disappears; the fictionalist approach, seeking a fundamental grounding of the concepts used, allows here to make distinction between grounded and ungrounded concepts, the former inevitable, the latter artificial.

13. Chomsky (2005, 6) distinguishes three factors in language design, understood as factors that enter into the growth of language in the individual (where 'language' is a state of the faculty of language): genetic endowment, experience, and principles not specific to the faculty of language. As examples of the third factor, Chomsky suggests principles of data analysis, principles of structural architecture and computational efficiency (Chomsky, 2005, 9). These factors enter into the biological development of the faculty of language, which we assume to be not fictitious but real. On the other hand, our analysis of the faculty of language, on the fictionalist approach contemplated here, is inevitably a model, i.e. a system of description making use of essentially metaphorical concepts. The parallel with the mathematics used in the analysis of the physical world, then, suggests that for these concepts to be used in a meaningful way, they need to be grounded in something that has the quality of the inevitable, like axioms in mathematics. If so, third factor principles are the only ones relevant to the construction of a model for linguistic analysis.

14. To conclude, I have suggested that it is possible to combine an essentialist approach to the faculty of language with a fictionalist approach to linguistic analysis, just like we can entertain a fictionalist approach to mathematics without denying the reality of the physical world. Needless to say, these are very preliminary remarks, but I am encouraged to formulate them as I have not seen

any other discussion of the relevance of the fictionalism/platonism debate for theoretical linguistics.

15. Dany Jaspers has shown uncommon friendship and interest in my work from the earliest days, and on several occasions I have been privileged to make crucial use of his original insights and analyses. I feel honored to be included in this congratulatory effort.

Groningen, January 14, 2018

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