

A METHODOLOGICAL ARGUMENT AGAINST MULDER'S PARALLEL VS DIVERSE DETERMINATION DISTINCTION^[*]

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Abstract. It is argued that the distinction between parallel and diverse determination as proposed by Jan Mulder cannot be applied in linguistic description because it relies on knowing the full composition of position classes. Although we may be intuitively satisfied that two position classes do or do not have the same composition, there are no scientifically valid methods that can confirm it. According to Mulder, however, it is necessary to attempt to refute a hypothesis that they do not have the same composition, the attempt being successful if we can show that in fact the two classes are equivalent. What Mulder fails to acknowledge is that it is never possible to show this. If one was to hypothesise the existence of an additional member for one of the classes but not the other, one would run up against the impossibility of refuting an existence postulate. Consequently, it is never possible to refute parallel determination, Mulder's precondition for establishing diverse determination.

In his review of Jan W. F. Mulder's *Foundations of axiomatic linguistics*¹ Paul Rastall² acknowledges Mulder's inestimable contribution to functional linguistics and goes on to discuss some examples of his syntactic analysis. He points out the lack of criteria for deciding between certain alternative analyses, and shows that Mulder's notion of direct tactic relation (i. e. relation between a peripheral and a nuclear element), "qui est à la base de l'analyse syntaxique de Mulder" (p. 145), is neither defined nor made methodologically explicit. A further weakness in Mulder's treatment of tactic relations, and one which has far-reaching methodological implications, and is not mentioned by Rastall, is Mulder's division of direct tactic relations into two types: *i*) parallel (conjunctive) determination, and *ii*) diverse (disjunctive) determination.

The difference concerns the composition of the position classes associated with the peripheral positions. In a 1977 paper³ (published in 1980) Mulder says "Within subordination I distinguish between *diverse determination*, i. e. the case in which two or more peripheral

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¹ Jan W. F. Mulder, *Foundations of axiomatic linguistics*, Berlin, Mouton de Gruyter, 1989.

² Paul Rastall, "La linguistique fonctionnelle axiomatique", *La Linguistique* 29/1, 1993, p. 135-148.

³ See Jan W. F. Mulder, "On the representation of syntactic structures". Paper presented to the Quatrième Colloque International de Linguistique Fonctionnelle, Oviedo, Spain, 1977; printed in *The strategy of linguistics* by Jan W. F. Mulder and Sándor G. J. Hervey, Edinburgh, 1980, p. 152-160.

constituents can be demonstrated to stand in different positions to the nucleus..., and *parallel determination*, i. e. where this is not the case" (p. 154). And in *Foundations* Mulder says "in cases of parallel determination the position classes of the peripheral constituents are different (though they may have some members in common), whereas in diverse determination they are basically the same" (p. 174-175). The motivation behind the distinction appears to be that if the same set of entities can stand in two or more positions, say *position a* and *position b*, then when a member of the set is in *position a* it must be determining the nucleus of its construction in a different way from how it determines it when it is in *position b* otherwise the two constructions would be variants with the same distinctive function. If, on the other hand, the same set of entities *cannot* stand in both positions then the question of how members of the two sets differentially determine the nucleus does not arise.

To exemplify the two kinds of determination Mulder gives the two syntagms *John likes Mary* and *the blue vase* (*Foundations*, p. 448). In the former any item that commutes with *John* will also commute with *Mary*, and *John* and *Mary* will permute to give a sentence with a different meaning, *Mary likes John*. It is clear that *John* has a different relationship to *like* in the two positions: we can, for the sake of convenience, call them a subject-relation and an object-relation. And what is true for *John* is true for all its commutants and thus for the class of commutants as a whole. Clearly, therefore, subject-relation and object-relation are diverse kinds of relations.

By contrast, in *the blue vase* the two peripheral elements (*the* and *blue*) cannot permute and neither can their commutants. We thus have two different position classes so that *the* and *blue*, and their respective commutants, always determine *vase*, and its commutants, in the same way; that is to say, they can never determine it from the perspective of a different position class. Mulder calls this state of affairs parallel determination. According to Mulder, in phonotactics there is no parallel determination, only diverse determination (*ibid.*, p. 293-294).

The above is, I believe, a faithful interpretation of Mulder's thinking and is certainly consistent with passages, such as the following, where he sets out his position on this:

Typical for diverse determination is that the peripheral items involved are equivalent as to the positions in which they can occur (*Strategy*, p. 155).

Any item that can stand in 'subject' position can also stand in 'object' position, and vice versa, at least in principle (*Foundations*, p. 279).

There is diverse determination if and only if at least two of the classes are the same, and parallel determination only if all classes are different (*ibid.*, p. 295).

In the case of 'diverse' determination, the relation between one of the peripheral entities and the nucleus, and that of at least one other of the peripheral entities and the nucleus, is different. That is, the hypothesis that the relations are not different is refuted. But it can only be refuted if the classes of items that can stand in the two, or more, peripheral positions in question are the same (*ibid.*, p. 279).

Before discussing the methodological implications of the distinction between parallel and diverse determination, we should examine some of the claims Mulder makes in treating of the distinction.

First of all, his claim that "Any item that can stand in 'subject' position can also stand in 'object' position, and vice versa, at least in principle" (*Foundation*, p. 279). Even conced-

ing that he is talking only about English here, this is probably not the case when we consider reflexive constructions, e. g. *he hurt himself*. Mulder does not argue the point and in fact gives the Latin example *ego amo filiam* to show that certain morphologically complex signs may occur in 'object' relation to the verb but not 'subject' relation. If the Latin example is a case of parallel determination then surely so is the English reflexive.

Secondly, his claim that there is no parallel determination in phonotactics does not accord with his assertion that "archi-positions can only obtain, with respect of peripheral positions, in cases of *parallel* determination" (*Strategy*, p. 155; see also *Foundations*, p. 443, Definition 7*h*) when we note that he sets up an archiposition in the phonological form of English *twelfth*, for example (*ibid.*, p. 230-232). Either parallel determination does occur in phonotactics, or archipositions can obtain also where there is diverse determination. Otherwise we have a contradiction, and, as Popper remarked, the acceptance of contradictions leads to the collapse of science⁴.

Thirdly, Mulder seems to suppose that there will always be at least two identical peripheral position classes in the phonotactics of a language (at least those with two or more peripheral positions). If there is any logical reason why this should be so, Mulder doesn't present it; nor is this necessarily the case in English if the notion of the phonotheme, first proposed by Lamb, is accepted as theoretically valid: a first immediate constituent analysis incorporating phonothemes (simultaneous bundles of two or more phonemes) would very likely fail to turn up any two identical position classes⁵ (although, as outlined below, it is actually impossible to establish whether classes are identical or not).

Turning now to the methodological issue, the procedure he advocates for establishing whether a given instance of determination is parallel or diverse is repeatedly emphasized by Mulder. Some further quotes will illustrate this.

In the case of parallel determination, the hypothesis that there is no diversity in determination remains unrefuted, precisely because the position classes are different (*Foundations*, p. 175).

We have parallel determination if it remains unrefuted, and only diverse determination if the hypothesis of parallel determination is refuted by producing two identical peripheral classes (*ibid.*, p. 280).

One has to assume parallel determination until this is refuted (*ibid.*, p. 448, Definition 14*b*; this statement is not contained in Definition 14 *b* of the 1980 version of the Postulates for Axiomatic Functionalism (see *Strategy*, p. 51)).

Doubtless this is motivated by the principle of simplicity, i. e. one hypothesises the simplest of all possible states of affairs⁶, and parallel determination is simpler than diverse determination in that the former requires no further attention — there is nothing else that need be said about it; the latter, on the other hand, requires some further statement about the nature of the diversity, e. g. in terms of 'subjectness' and 'objectness' and suchlike (or,

⁴ See Karl R. Popper, *Conjectures and refutations*, 4th edition, London, 1972.

⁵ A full application of the notion of the phonotheme to the phonotactic description of English is as yet lacking, but see Barry C. Heselwood, "Extended axiomatic-functional phonology", D. Phil. thesis, University of Ulster, 1992, p. 127-134, Barry C. Heselwood, "Simultaneous phonemes in English". *Linguistica* ONLINE, <<http://www.phil.muni.cz/linguistica/art/heselwood/hes-001.pdf>>, 2008.

⁶ See Michael A. L. Lamb, "Free allomorphy or synonymy". Unpublished paper presented to the SILF conference, Montreal, Canada, 1983.

more properly, in terms of those properties for which these are convenient labels). The procedure is thus well-motivated as one would expect it to be. Unfortunately, however, it is an impossible procedure to implement. I shall outline why I believe this to be so. We need to be sure first of all what Mulder regards as a proper hypothesis. Some of his most forceful and insightful statements on the kind of methodology required by a scientific approach to linguistics deal with precisely this. In *Foundations* he presents three conditions that are necessary for a hypothesis to be regarded as a proper hypothesis: it is the third of these that concerns us here.

It should be in principle refutable, i. e. it should not *a priori* be irrefutable. The latter is the actual essence of what is a hypothesis in the Popperian sense. Yet it is the least understood and the most violated (p. 181, original emphasis).

He is quite clear in advocating tighter constraints on what constitutes a valid hypothesis than those imposed by Popper when he says that “A *hypothesis* is in principle refutable only if it contains the negation of notions defined in the theory (except where there are antonymous terms involved...)”⁷. His Popperian colours are clearly displayed when he points out that it is only by refuting a hypothesis that we can arrive at descriptive statements that are, in terms of the theory, deducible as true. As Mulder puts it, “Only refutation leads to exact knowledge” (*ibid.*). Merely corroborating a hypothesis only gives it a stay of execution (perhaps indefinitely) and in no logical way can we derive a theoretically true statement from something that we know in principle may be false. For this reason what Mulder calls ‘positive’ hypotheses can only be corroborated, never refuted: they are *a priori* irrefutable (*ibid.*, p. 120).

‘Parallel’ and ‘diverse’, being antonymous terms in the theory, can legitimately occur in a hypothesis without negation, hypothesising one is equivalent to hypothesising the negation of the other. Thus far nothing prevents us from hypothesising that a given direct tactic relation is a case of parallel determination. At least not until we consider what would actually refute such a hypothesis.

According to Mulder, as we saw above, producing two identical peripheral classes (i.e. two classes with exactly the same members) would refute it, but this is not as simple as it might sound. How do we proceed to show that two classes are identical? By the procedure of hypothesis and refutation we cannot even establish that two classes are equivalent (i. e. have the same cardinality, or number of members), equivalence being a necessary but not sufficient condition for identity of classes. Suppose we have our two position classes, *a* and *b*, the hypothesis we would offer for refutation might be (remembering that only refutation of a hypothesis containing a negated theoretical term can lead to a ‘true’ conclusion, and ‘equivalence’ is a theoretical term in mathematics);

“Class *a* and class *b* are not equivalent.”

To refute this we need to list the members of both classes and compare the lists. If the two lists are identical in number the hypothesis cannot be said to have been refuted, for if both lists contain, let us say, ten items this is no proof against one of the classes actually containing an eleventh member. In the event of someone hypothesising that class *a* does

⁷ See Jan W. F. Mulder, “Simplicity in linguistic description by ‘negativism’”, in Brigitte K. Halford and Herbert Pilch (eds.), *Syntax gesprochener Sprachen*, Tübingen, 1990, p. 119.

indeed have an eleventh member as yet undiscovered we would be in serious difficulties. Mulder quite rightly points out that not finding something in a field of phenomena of infinite extension is no justification for concluding that it isn't there (*Foundations*, p. 182; *Simplicity*, p. 120). We therefore could not refute their hypothesis and would have to concede that time might prove them right. For while we might be intuitively satisfied that we have in fact identified all possible members of a particular position class, e. g. all possible commutants of *the* in *the blue vase*, and even have the full agreement of all our linguist colleagues, we are not at liberty to elevate that satisfaction and agreement to the status of exact knowledge.

Finding an eleventh member of *a* would of course refute the hypothesis that it only had ten members but we can never establish via hypothesis and refutation how many members it does have, nor of course how many class *b* has. It follows from this that, at least insofar as we adopt a negativist hypothetico-deductivism as a methodology of empirical inquiry — and I am not arguing against this — we can never establish, as a piece of exact knowledge, that two classes are or are not equivalent. If we cannot establish equivalence we cannot establish identity. In fact it is impossible to establish the membership of any class for which there are no logical limits. Logical limits would be enforced, for instance, in the class of whole numbers between any two whole numbers, and in various other mathematical sets, but mathematical truths are true by definition, not by refutation of hypotheses (although some philosophers, e. g. John Stuart Mill⁸, have thought otherwise). In linguistic description, however, we cannot enforce logical limits to classes of linguistic entities. What, for example, is the logical limit for the number of phonemes in a given language? Hypothesising thirty can be refuted by finding thirty-one but not by finding only twenty-nine⁹. How then can a hypothesis of a hundred and thirty phonemes in a particular language be refuted? Mulder is well aware that it could not, hence his advocacy of negativism as a corrective to such violations of the principle of simplicity. But what applies to inventories of phonematic classes applies equally to inventories of position classes.

What it all boils down to in essence is the impossibility of refuting an existence postulate, that is to say that if someone asserts the existence of such-and-such an object we cannot refute that assertion by, as it were, observing an instance of its non-existence. Hypothesising an undiscovered member of a class is therefore as *a priori* impossible to refute as hypothesising the survival of the dodo. In other words, we can formulate proper hypotheses to establish whether or not a particular entity *x* belongs to a particular class *a* but not whether *x* exists: such a hypothesis could be corroborated by observation, we might even say proved, but not refuted. It is therefore not a proper hypothesis but a pseudo-hypothesis. This is consistent with the rejection of existence as an attribute by many philosophers, going back at least to Kant¹⁰, insofar as attributes can in principle be investigated by hypothetico-deductive falsificationism whereas existence cannot.

If we can never refute a hypothesis of parallel determination then we never reach the point of establishing diverse determination and the notion of diverse determination thus ceases to have any application in linguistic descriptions. As Mulder reminds us, a linguistic

⁸ See John S. Mill, *A system of logic*, 8th edition, London, 1970, p. 164-172.

⁹ The use of the word 'finding' here is not meant to imply that phonemes, or any other theoretical models, exist in the data; it is used simply for terminological convenience.

¹⁰ See Alfred J. Ayer, *Language, truth and logic*, Harmondsworth, 1971, p. 57-58.

theory for axiomatic functionalists is of value only as a tool (or set of tools, perhaps?), for carrying out scientifically respectable linguistic descriptions (*Foundations*, p. 39). If part of one's descriptive apparatus turns out to be unusable there is no reason to keep it. This critique of the distinction Mulder has drawn between parallel and diverse determination, if its premises are accepted and its reasoning is valid, can only conclude by suggesting that the distinction, and the terms of the distinction, should be abandoned. It is claimed, in fact, that the argument presented above refutes the metahypothesis that a hypothesis of parallel determination (or for that matter a hypothesis of diverse determination, the same objections apply) is a proper hypothesis.

When part of an existing theory is found to be inapplicable for a particular methodological reason, the theoretician must look to other parts of the theory to see whether any of those may also be inapplicable for that same reason. In the point at issue here it is necessary to see whether any other theoretical models or notions in axiomatic functionalism require enumeration of a class or classes as part of the procedure of applying them in descriptions of data. There is one crucial notion in the theory where it seems this may be required, and that is the notion of distinctive function itself, the linchpin, as it were, of the whole theory. Were this to turn out to be inapplicable, the whole theory would fall. It is of some importance, therefore, to examine this question.

Mulder defines distinctive function as “the set of oppositions in which an entity may partake”, giving the example of $a \sim (b \cup c \cup d)$, which states the distinctive function of a , in case the set of oppositions a enters is $(a \sim b, a \sim c, a \sim d)$, and no other”. (*Foundations*, p. 441, Definition, 7a3). It is the “and no other” stipulation that causes the problem because we cannot refute the hypothesis (in fact pseudo-hypothesis) that a is also opposed in the same context to a hitherto unobserved occurrence of e . The exact extent of the set of oppositions into which an entity enters therefore cannot be established, and any statement of that extent will only ever be provisional. This would be fatal if the exact extent of the set had to be established either as a prerequisite for further descriptive procedures, as was the case in deciding between parallel and diverse determination, or for reasons of material adequacy. Fortunately, this is not the case. All we need to know is whether, given any two linguistic objects (identified as such by other relevant procedures, e. g. protocolisation), they have the same distinctive function or not. Mulder's negativist hypothetico-deductivism cannot be faulted for the precision with which it can be applied to yield an exact answer to this kind of question. In fact it is this very methodology that frees us from the obligation to state exactly how many members a particular class has. For example, we are not obliged to refute the hypothesis that English /t/ has four distinctive features, or that English has two lateral approximant phonemes (see Mulder's discussion of the (pseudo-) hypothesis that ‘clear’ and ‘dark’ l are separate phonemes in English (i. e. have different distinctive functions) in *Foundations*, p. 182). These hypotheses are not necessary unless and until we find that we can no longer produce materially adequate descriptions of English speech — that is, descriptions that successfully account for the data of spoken English — on the assumption that /t/ has only three distinctive features (see *Foundations*, p. 222-223), and there is only one lateral approximant phoneme.

For functionalists the value of a linguistic entity derives from the paradigmatic oppositions which it contracts with other entities in a given context; we try to establish as few such oppositions as we can whilst remaining materially adequate, and acknowledge no ob-

ligation to refute any hypothesis that there are more oppositions than we deem necessary (see Lamb, *Allomorphy*, p. 1). In the case of trying to establish parallel determination, however, we are obliged to attempt to refute hypotheses that there are more position class members than we deem necessary — and there are of course an infinite number of hypotheses of this kind — otherwise we cannot enumerate the classes in question in order to attempt a refutation of the hypothesis that the two classes are different. And to be under an obligation to attempt to refute the irrefutable, even just once, is more than an axiomatic functionalist can really bear.

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